MONTHLY

JOURNAL OF AGRICULTURE.

VOL. II. MARCH, 1847. NO. 9.

EXPLANATION OF THE PLATES.

AYRSHIRE BULL, GEORDIE—whose faithful Portrait appears in this number—was imported in the ship Europe, June, 1846, for R. L. COLT, Esq. of Paterson, N. J. Geordie is a descendant of the famous bull of that name, the brag bull of Scotland, and is now rising 3 years old. He was selected for Mr. C. by John Ternant, Esq. of Shields. Mr. T. is Vice President of the Ayrshire Agricultural Society, and a very distinguished farmer. He selected this bull and Mr. Colt's cow Bessy from the best and purest Ayrshire stock in Scotland. The bull whose portrait is here given took the premium at the Ayrshire Cattle-Show last year; so that those who see him will see what is deemed a crack specimen of that favorite breed in its very home of homes. This and the Devon race are the two lately selected by the Massachusetts Agricultural Society for importation.

We understand that some lately arrived at Baltimore for Mr. McHenry, of Hartford county, sent by his friend and relative, McHenry Boyd, Esq., lately Secretary of Legation to our Mission to England. We have now as fine specimens of cattle, of all the principal breeds of Great Britain, as are to be found there.

DEVON CATTLE.—We may express our own doubts whether there is a herd at once so perfect and so large as Mr. GEORGE PATTERSON'S, in Maryland. He, too, has lately imported another bull, laying his agent, as usual, under no limit as to price. We understand that Col. Capron lately had the good luck to get some of his stock, and we hazard nothing in saying they will be prized and cared for as they should be, which has not always been the fate of this race of cattle.

MASSACHUSETTS AGRICULTURE.

THE signs that indicate an awakening interest for Agriculture throughout the country, and the desire now evinced in some of the States to see what aid it, too, may fairly claim from men in authority, lead us to believe that we may render an acceptable service by a review of what has been done in the "Old Bay State," where excellence in the various branches of rural industry has been elicited and rewarded, for many years successively, by the offer of premiums, under legislative sanction. Massachusetts is selected, to show what has been there accomplished, not only for the reason that she is among the oldest sisters of the Republic, and that she was among the first to form Societies and publish Memoirs for the benefit of the cause—but because, having to contend, with indomitable persistance, against natural ruggedness and disadvantages of soil and climate, there seems to be a peculiar fitness and usefulness in holding up *her* excellence, in various departments, as being at once worthy of emulation and quite within the reach of successful rivalry, and even of being surpassed by States more favorably situated, if undertaken with a corresponding degree of earnestness and constancy. We do not say *skill*, for the reason that we are not among those who believe, and would persuade the world, that the principles and true processes of husbandry are better understood in the North than in the South; that

is to say generally, and among those who have the direction of the labor and capital at work in the field. We should doubt, indeed, whether, in any part of the world, agricultural operations are conducted on so large a scale—we might, perhaps, say on any scale—with more skill, neatness and completeness, than, for example, and from what we have heard, on Colonel Singleton's and Mr. Calhoun's estates; and, from what we have seen, on Colonel Hampton's; and, without intending to be invidious, we may add, at Hopeton, near Darien, Georgia, by Mr. I. Hamilton Couper, where thirty thousand dollars' worth of steam and other machinery employed in the various processes of flooding and draining, and of cleaning and preparing the various crops for market, demands not only practical knowledge of ordinary performances in the field, but no inconsiderable acquaintance with book-keeping, hydraulics, civil engineering, and even agricultural chemistry—as far particularly as relates to the complex process of sugar making. Nor are such capital and means to be conducted to their fullest development without a decided talent for the command and appropriation of the forces at hand—sometimes to be employed in combination, according to the exigencies of the season and the crops; and again to be divided, and so separately applied as to make everything tell to the greatest advantage.—Such estates may, it is true, fall occasionally under the control of men without ambition, knowledge, forecast, or energy; but they are not to be profitably and honorably *managed* without the possession of all these qualities, and that in no ordinary degree. But to our subject.

The "MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE," the first in the State of its kind, was founded and incorporated as far back as 1792. It raised a fund of $4,000 by subscription; and by an annual assessment on its members it proceeded at once to distribute premiums and to import valuable animals. In 1797, it instituted its "*Journal*," which was continued for more than thirty years, promulgating papers that evinced remarkable ability, and a public spirit and disinterestedness highly honorable to its members. It took measures, also, for the establishment of County Societies, and for the erection of an Agricultural Hall. It also contributed to the establishment of the *Professorship of Natural History* and of the *Botanical Garden* at Cambridge.

In 1819, the *State* appropriated $200 annually to every Society which would raise $1,000 for the promotion of Agriculture, and in like proportion for any greater sum, not exceeding $3,000; so that no Society, whatever may be the amount of its funds, can claim of the Commonwealth more than $600. From the date above mentioned to 1845 inclusive, as appears by the "Abstract" from which this statement is taken, there had been ten Societies incorporated, to which the State had contributed $115,816 61; besides three others, which, at the date of the Abstract, were "not known to have gone into operation."

In 1837, Resolves were passed by the Legislature, authorizing and requesting the Governor to appoint some suitable person to make an "agricultural survey of the Commonwealth; collect accurate information of the state and condition of its Agriculture, and every subject connected with it; point out the means of improvement, and make a detailed report thereof, with as much exactness as circumstances will admit."

Writing now from home, and not in reach of our books, we can only venture the impression that this enlightened measure on the part of the Legislature was enacted in conformity with a suggestion from Gov. EVERETT, now the accomplished President of Cambridge. It would be well for the country, and promis-

ing to the welfare of a branch of industry more productive, in most of the States, than all others united, if some other Governors would cast about to see how the laws affect it, and to suggest for the landed, as well as for more partial and limited interests, such enactments or modifications of laws as might tend to relieve its products of unjust burdens, and to enlighten the pursuit of it in the field; unless, indeed, it be that, as some seem to suppose, the laws *have nothing to do with Agriculture.*

It was made the duty of the Agricultural Surveyor to furnish the Governor with a summary of his survey, every six months, and at such other times as he might require, to be published in such manner as he may deem expedient; and he was authorized to draw his warrants "to defray the expenses of such survey, and to enable the person so appointed to proceed in the execution of the duties that shall be required of him; and pay the same to him, not exceeding the sum of two thousand dollars per annum."

Under this authority, Mr. HENRY COLMAN, appointed Agricultural Surveyor, published four Reports, which, as has been truly said in the "Abstract" before us, "had a wide circulation in the country, and attracted favorable attention abroad." Of the zeal and ability displayed in these Reports, and of their great usefulness, we have repeatedly expressed, but not as strongly as we feel, our warmest approval. We had lately the good fortune to procure a second-hand copy in Boston, and intend to fortify our opinion of their great value by occasional extracts. It would be, with most readers, superfluous to add that the Surveyor appointed by the Governor is the same Mr. Colman now on an agricultural tour in Europe, and whose personal observations there are read here at home with pleasure and with instruction—except, perhaps, by some, of whom there are always and everywhere too many, who know so much already that they have nothing more to learn; and who, because it is colder or hotter, or wetter or drier, in some parts of Europe than in parallel latitudes elsewhere—and because, forsooth, labor is cheaper there than in the United States, together with some other differences of institutions and circumstances—therefore sagely conclude that we have nothing to learn from European books or essays on Agriculture, or descriptions of their implements, machinery, or processes; as if the principles of mechanics, and of chemistry, and botany, and civil engineering, as applied to draining, and road and bridge making, the composition of manures and the constituent qualities of soils and plants, &c., were not the same in one country as another! and as if the American reader had not sense enough, in comparison of the modes and labor employed in tillage in various countries, to make allowance for specified differences in the cost of these, and of food, &c., in a way to arrive at just conclusions, and to avail himself of the lights which all admit science has of late years reflected on all the operations of husbandry in some parts of Europe, and especially in England and Scotland, very far beyond what it is yet doing for the same branch of industry in the United States. For ourselves, our temper is to take pride, first and sincerely, in all that is the fruit of American skill and genius, if better, or even as good, as to be found abroad; but, at the same time, *to consider no place as too distant or too bad to go to for knowledge!*

Moreover, while we exult in such names as Franklin, and Clinton, and Godfrey, and Whitney, in natural and mechanical sciences; and in such benefactors and illustrators of American Agriculture, in its practice and literature, (ay, in its *literature!*) as Taylor, and Madison, and Garnett, and Ruffin, of Virginia; and Audubon, and Bachman, and Pinckney, and Poinsett, and Seabrook, and many

others, of Carolina; and Peters and Biddle, of Pennsylvania; and Livingston, and L'Hommedieu, and Ruffin, and Mitchell, of New-York; and Lowell, and Quincy, Sullivan, Colman, Pickering, Gray, Harris, Dearborn, Everett, &c. of Massachusetts—we should still think it strange if there were not yet much to be learned of both its practice and the sciences that make that practice more fruitful, from the country and the descendants of such men as Newton, and Brindley, and Napier, and Parkes, and Davy, and Watt, and Arkwright; with the wealth and munificence of a Coke or a Francis, to patronize genius, and to lead it, through poverty and every difficulty, into activity and public usefulness, for the benefit and glory of their country.

But in all this, perhaps, we are wrong, and not *sufficiently practical!* With some there is a vulgar belief, and with others an affectation of it yet more disgusting, that none can impart instruction in Agriculture except those who daily labor at what they teach—as if Mr. Downing's sketches of cottage residences were any the less elegant and tasty because he whose fine fancy designs them may not be practically expert in the use of carpenter's tools. But once more back to our subject.

To aid those who may be honorably inclined to help along the good cause, and whose number, we trust, is rapidly increasing, we published in the September number of 1846 the laws now in force in Massachusetts relating to the subject. We proceed, therefore, to give such view of the proceedings of the several Societies in that State as will place before the reader the results of competition, in the several branches of her agricultural industry, together with such accounts of the means employed to reach them as will, altogether, give something of a picture of the whole husbandry of a State which, as before said, has attained under great difficulties a degree of success worthy of emulation—one which has won for her inhabitants the high reputation of being a remarkably laborious, skillful, thriving and intelligent people; out of debt, and independent in their private circumstances; proud of their liberty, and ever ready and able to defend it. And, after all, is it not by knowledge, and that virtue which is the *sure fruit of knowledge only*, that any yeomanry can hope to reach and to maintain such a condition? If this republic is at this moment in any peril, it may be ascribed to the want of sufficient and *suitable education on the part of the owners and tillers of the soil!*

First, as to *the* Massachusetts (*State*) Agricultural Society proper—we have shown in the number referred to, containing Mr. PHINNEY's description of the stock imported by it last year, how it was led to pretermit the offer of the ordinary premiums, and to reserve their funds for the importation of *Ayrshire and North Devon cattle.* There it is expressly stated that "thousands of dollars have been awarded in premiums for the best milch cows, during the last twenty years, and, as appeared to the Trustees, *to very little benefit.*" Indeed, Mr. Phinney, whose statement appears to have had the sanction of the Trustees, says generally, as to the effect of these shows to promote improvement in the various branches of husbandry, that they had for "many years devoted the income of the Society's funds to premiums on the best cultivated farms, on the various kinds of farm produce, farm stock, and such other objects as they believed best calculated to promote the interest of the great body of the farmers;" and that "it seemed to the Trustees that very little progress had been made, particularly in the dairy stock of the country." That whole paper is well worthy of re-perusal, as the deliberate testimony of practical men of unsurpassed judgment, vouched

and corroborated by one of their own body, than whom no one stands higher in the agricultural annals even of his State. On the total uncertainty that attends breeding from an ordinary stock of no particular blood, he says: "The cautious farmer will not run the risk nor incur the expense of raising a calf from stock of the origin of which, and of the blood that runs in the veins of his favorite cow, he knows nothing."

"It may be contended," says he, "that we need not the aid of foreign stock to raise up one of the best breeds of cattle in the world. This may be true, but who will undertake it? What individual farmer has the patience, the skill, the intel ligence and the capital to engage in a task that will require many years and much capital to bring to any considerable degree of perfection? And where would be the propriety or economy of undertaking a work of this kind, when, by a little extra expense at the commencement, we may find the work already done to our hands?"

It is not enough, it may be added, that any gentleman should make an occasional importation of a pair or more of the best animals; for, without having recourse to different families of the same blood, they would soon degenerate by close breeding, and want of nice judgment in the choice of breeding stock. In answer to the question, Who has the capital, and who will take the requisite pains? we may, without invidiousness or prejudice to others, name a few that occur at the moment, owners of choice specimens of crack breeds, besides the Devons and the Ayrshires of the Massachusetts Society, so prudently placed in the care of Mr. Phinney. There is, for instance, the very superior herd of Short-Horns imported and bred by Mr. VAIL, of Troy, and Mr. SHERMAN, of Auburn; and the Herefords, no less numerous and perfect in their way, of Mr. CORNING. Mr. PRENTICE has, we believe, disposed of nearly all his Short-Horns; but it is not to be doubted that the gentlemen named, while they continue to breed of their favorite races respectively, will import the best bulls every three or four years, and bring all their judgment to bear in keeping their *breeding* stock clear of everything that is stained in blood, or defective in form. So we may predicate of Mr. HURLBUT, of Connecticut, and of all others engaged in breeding improved stock *for sale*. This we know to have been the practice of Mr. PATTERSON, with his splendid herd of Devons, in Maryland. His practice is to import frequently the very best bulls to be had in England, without regard to price; and, with an eye and a judgment not to be deceived, he unites a pride in his own character as a breeder, and in that of his stock, that would lead him much sooner to give away a superior than to sell a decidedly defective animal for any price. And here we may as well say, once for all, *currente calamo*, that as we ever have, so we ever shall, heartily despise the malign and particularly the covert insinuations of those who would ascribe improper motives either to our praise or our censure—too humble, it may be, either to benefit or disparage any one. One thing we may fearlessly say, that we are conscious of never having harbored any thought but thoughts of kindness to *all* our colleagues, whether editorial or otherwise, co-workers in the field of agricultural or *horticultural* improvement; nor shall we be easily provoked to act otherwise against, equally, our habits and our nature.

For the matter of plainly and frankly commending the examples, and testifying to the judgment of cultivators of exemplary industry and discernment, far from seeing anything in that either reprehensible or indelicate, we hold it to be in the line of our station and duty. Occasions of censure on the other hand, much more of retaliation for totally unprovoked attempts to injure, may be often and again

omitted. Much more agreeable is it to do good for evil; while to professed moralists, and men of more leisure, must be left the task of shooting "folly as it flies." And Heaven knows it flies thick enough, especially in the appropriation of what little can be collected for improvement in Agriculture! In this matter of doing justice, or, if you will, praising and bringing out into the relief they would shun, the friends of rural industry, there are those to be found in this world more nice than either wise or honest, who can strain at a gnat and swallow a camel. Hence if a *man of war* have the good luck to imbrue his hands in the blood of his fellow men, and by the prowess of his right arm succeed in adding largely to the list of widows and orphans, no praise is too extravagant for *him*. Medals and thanks are voted by Congress, and none too rich or too exalted to do *him* reverence. The 'Sovereigns' throw up their "greasy caps," and huzza as he passes, and Editors with one voice join in the universal hosanna! until every village is eager for the honor of claiming, not its Confucius or Homer, its Franklin or its Clinton, but some gallant knight

> "That never bowed his stubborn knee
> To anything but chivalry"

We don't mean your real, old, thrice-tried heroes, such as have led in our Army and Navy, whose humanity gives to their chivalry its highest lustre, and whose love of peace and mercy has been known to subdue their military ambition, where opportunity presented redundant harvests of glory. No degree of enthusiasm, no measure of praise is deemed extravagant, if excited by the smell of powder, or the sight of blood; but if one poor Editor lift his feeble voice in eulogy of men who would by their industry, or their liberality, or their enterprise, or their learning, benefit the human race, by benefiting the most useful and productive of all the industrial, though it may be "dull pursuits of civil life," straightway some craven spirit, alike devoid of manliness and discernment, imputes unworthy motives to the action, interpreting the feelings of others according to the meanness of his own nature. Once again, then, and for all, we mean, while we have the power, to leave on record, as far as our pen can go, what we trust may prove testimony of some endurance, to the *really* virtuous, because *really useful* actions and deportment of those who do good to *American Husbandry*, whether by the *pen* or the *plow!* and for the rest, all we have to say is, *honi soit qui mal y pense*. But let all such evil thinkers remember that two, at least, of those whose living examples of skillful tillage and management we have most particularly commended, and the *portrait of one of whom* we shall endeavor to preserve in this journal, are what are called "*overseers*," or managers of large estates; neither patrons of this work, nor dispensers of patronage in any form, but distinguished for their unassuming manners, industry, judgment, and firmness, tempered with humanity; and therefore, at least in our humble esteem, more worthy to be honored than your *mere red-handed warriors*, fighting for pay, without care for cause or consequence! The reader will bear with this digression when we express the hope that as this is the first, so may it prove the last time that we shall turn aside to speak in *this connection*.

Recurring to Mr. Phinney's interesting exposition of the views which prompted the Massachusetts Society to *import cattle* instead of offering the usual stereotype list of premiums, it will be seen that he expresses the opinion that the cows of farmers who depend principally on that source for their income, "do not generally yield an average daily produce of more than from *two to four quarts of milk throughout the year*." Whereas, he adds, in another part of his state-

ment, "Aiton asserts that many of the Ayrshire cows in their *best condition, and well fed*, will yield at the rate of 1,000 gallons of milk in one year, or over ten quarts of milk per day. Rankin, however, states his opinion that Aiton had given the daily average produce too high, and thinks that few herds of twenty cows or over will *average more than eight hundred and fifty gallons, or about nine quarts a day!*" Mr. Colt's Ayrshire bull, *Geordie*, whose faithful portrait is given in this number, was imported with evidences of *personal* merit, and under other circumstances to insure him to possess in an eminent degree the characteristics of his race. The same gentleman has other imported and pure specimens of that and of the Alderney race of cattle. There were also two cows and a bull well selected and sent last autumn, consigned to Mr. George Law of Baltimore, by McHenry Boyd, Esq., to his relative Mr. McHenry of Hartford County, Maryland. Of the particulars of that importation and the considerations which induced it, so far as it may have been prompted by any particular observations or information in Scotland in favor of the breed, we shall endeavor to possess ourselves. We need not say that all notices of the importation or possession of animals, or grasses, or grains, of particular kinds are intended as historical of the facts, and to facilitate the wishes of those who may desire to make farther inquiries with a view to information or purchase.

Having referred to what is said by Mr. Phinney, one of the Trustees of the Massachusetts Society, and doubtless with the sanction of his associates as to the Ayrshire cattle, we may add his remarks on the other breed, the North Devons, also selected by them for importation. "The North Devon stock has long been celebrated as a breed of cattle beautiful in the highest degree. For the dairy they cannot be considered equal to the Ayrshires, but viewing them as uniting the three qualities of working, fattening, and milking, they may be considered as unrivaled. Some of the English writers give them a high rank as milkers, and Mr. Conyers of Capt Hill, near Epping, a district almost exclusively devoted to the purposes of the dairy, preferred the North Devons "on account of their large produce, whether in milk, butter, or by suckling." "The North Devon oxen, says an English writer, are unrivaled at the plow. They have a quickness of motion which no other breed can equal, and which very few horses exceed. They have also a docility and goodness of temper, and a stoutness and honesty at work, to which many teams of horses cannot pretend."

We would add, that in our judgment the horse (as a precarious and expensive machine) ought to be banished from *field* labor, except where the land may be too heavy for the mule, and the climate too hot for the ox—two circumstances that *combine* only over a comparatively small portion of our country.

But in our eyes the most attractive feature in the proceedings of the Massachusetts Agricultural Society is the following, as set forth in this first "ABSTRACT" made out by Hon. "JOHN G. PALFREY," Secretary of State, and now elected, we believe and hope, to Congress—and that not from any knowledge or care about his *party politics*, but because in him we know there will be at least one patriot disposed to think that the true and substantial interests of a country may be at least as well served by guiding the plow-share as by brandishing the sword. Here is the act of the Trustees, to which we allude, and that we would hold up for imitation. By-the-by, among many other things that we have at heart to publish, if we can ever find the space, is a beautiful lecture of the celebrated Doctor Rush, on the importance of the study of *Comparative Anatomy* by country practitioners of medicine.

"The offer of a premium for the best Essay on the Diseases of Domestic Animals was subsequently modified. The subject being discussed, it appeared that this department of medical science had been little regarded in this Commonwealth; that if an animal be sick, or was wounded, regular practitioners were not usually summoned, and the farmer had to depend upon any one in his neighborhood who had acquired a reputation by some little experience for skill in cases of diseased animals. It was therefore voted that Doctor Warren, one of the Board of Trustees, be authorized to offer pecuniary aid to any student of medicine (whom he thought qualified for the purpose) to assist him in completing his education abroad, upon the condition that he should give a portion of his time and particular attention to the *veterinary establishments, for the relief and recovery of wounded or diseased animals*, in Europe, and especially in France; that he should attend the Lectures of the most eminent surgeons on these subjects, to *qualify himself to deliver lectures as well as to practice in this department of science on his return.*" And here again we cannot shut our eyes to that want of knowledge, or sensibility to their own rights, or that tame, submissive spirit on the part of agriculturists, which *qualifies* them to look on and see, without a murmur, the provision that is made, out of their substance, for enlightening all interests and classes but their own, without any attempt to claim their share of the public patronage for agricultural science. How many young men of the Army and the Navy have been sent abroad really to study, or under pretence of examining the most modern warlike discoveries and systems of managing light-houses, &c. and this on the mere *dictum* or pleasure of the head of a department! But if the object be to enlighten or benefit Agriculture, as in this instance, it can only be done by *private subscription!* and this, too, under a system of policy and administrations of public affairs established by the legislation of the *representatives of the landed interest*, the first to be taxed and the last to be cared for!

Here we find the pen has run over a space which makes it necessary to draw this essay to a close. The reader will please regard it as merely preliminary. The next will be altogether practical, presenting a view of Massachusetts Agriculture in all the counties where there are incorporated societies, and serving, for readers in other States, as the next best thing after a personal attendance at their cattle-shows—we had hoped to accomplish that purpose in this sketch, but we find we have only cleared the way, as the good husbandman picks off the stone and grubs his ground before he begins to plow.

GREAT IMPROVEMENT IN MAKING BRICKS.—Alfred Hall, Esq., late of Coxsackie, has invented a machine for making bricks. As to its properties and value, T. B. Wakeman, Esq., Corresponding Secretary of the American Institute, has received the following letter:

"This machine we have used for the last three years, to our entire satisfaction; it is simple in its construction, easily kept in order, and can be worked by men of the most ordinary capacity, moulding with ease from ten to twelve thousand per day, better bricks than can be moulded by hand or any other machine. We have had thirty of them in operation for the last two years, using fifteen of them alternate days, making each year about 15,000,000 bricks, and during that time the expense of repairing the thirty machines has not amounted to $10. This is not an exaggerated statement, but the plain, simple truth, such as we are willing to give in person to any one who wishes more particular information upon the subject, and will favor us with a call.

"P. Hubbell,
"Almon Abbott."

Charlestown, Mass., Dec. 9, 1846.

AGRICULTURAL EDUCATION.

PROGRESS OF PUBLIC OPINION—INDICATIONS OF A FAVORABLE CHANGE.

NATIONAL habits of thinking and acting on the great topics of public education and morals, are not to be expected to undergo those marked and visible mutations which are seen to take place, in a single season, in the taste and costumes of the luxurious and fashionable world. On the contrary, great changes in social institutions, and in courses of instruction and of industry, especially among agricultural communities, are necessarily the work of time, and to be finally accomplished with difficulty, and then only by the enlightened and imperfectly concerted labors of public spirited benefactors, too few and far between to rival in energy the more active and systematized exertions for improvement by merchants and manufacturers. Yet all anxious observers must perceive that a salutary change is now in progress for the benefit of American Agriculture—one which guaranties not only greater fruitfulness for the capital and labor embarked in it, but, what is yet more gratifying, higher rank and honor to those who resort to it as the means of support for themselves and their families.

The change to which we refer, and in view of which all enlightened friends of the cause may felicitate each other, consists in an evidently increasing disposition *to investigate the principles* which affect the results of practical Agriculture; and without a knowledge of which it can never attain either that dignity or success which God hath kindly ordained should only be won by the triumphs of mind over matter—of light over darkness. The American public is beginning to see that between the rude physical labor of the boor, who aspires only to know when and how to plant and to reap, as his father did before him—and the calculating forecast of the educated farmer, who has been taught to know exactly what each crop will demand and take away from the soil, and hence what it will require to be restored to it—there is as wide a gap to be filled up as has been filled up in the progress of medical science, by which the well-weighed remedies and skillful appliances of the accomplished physician and surgeon have banished the vile nostrums of the conjurer and the quack. Yes, truly, and for its honor be it said, that it is getting now to be understood that as wide a space is to be overcome in the art of cultivation, by a more thorough knowledge of the principles of tillage and of vegetable physiology, as has been passed in the art of ship-building and the science of navigation, as indicated by a comparison of the Indian's bark-canoe with the steam-frigate, plowing the "deep waters of the dark blue sea," with the precision of the sun itself as it marks its course on the dial-plate.

A great stumbling-block, however, in the way of science coming to speed the plow, is that want of ambition—that absence of all thirst for distinction—which is at once the parent and the offspring of ignorance; that lethargic self-contentedness, which creates the very difficulties it imagines to exist in the road to farther advancement. How common to hear even otherwise sensible men observe, "Oh! what can *books* teach us? What more have we to learn? With plenty of manure, and sufficient force, and good plows to work with, I can make as good crops as any of your book farmers!"—forgetting, or rather never having

learned, all the time, that a kind of manure comparatively without effect when applied to one crop, or kind of soil, may be powerful when applied to another; and that certain soils, if he were *educated to know their nature*, would be found to contain the constituents of one plant, while they may be quite deficient in what is necessary to the growth of another. Such men, who in their ignorance and self-conceit already know everything, forget how much the labor they employ has already been economized by the inventions of ingenious, thinking minds, applied to the structure of the plow itself; and that, long since, your anti-book-knowledge men, like themselves, believed that the plow had already reached the last stage of amendment of which it was thought to be susceptible. How different with the intellectual man—the man of progress—he who believes that the Almighty endowed us with reasoning faculties above all animals, that they might be kept in constant exercise for the melioration of our condition in all things! Such men, looking back on the field over which we have passed—advancing, even during the last half-century, from one labor-saving invention to another; from a less to a much more thorough knowledge of the nature of manures; noting the improvements in the form and economy of our domestic animals, until the art of breeding has been reduced to a science; marking the introduction of new and valuable fruits and vegetables—such men, thus blessed with hopeful and inquisitive minds, are readily persuaded that the end is not yet, in the progressive advancement of Agriculture, any more than in the arts of manufacture, in the application of steam, or in the discoveries to be made by astronomy or navigation. Such men see no good reason why steam itself should not yet be made far more contributory to the purposes of the farmer, in some proportion to what it has been forced to do for the civilizing operations of commerce, and the barbarous purposes of war. Thus enlightened and animated by a retrospect of what has been done, to hopeful exertion for the honor and benefit of their own pursuit, the intellectual cultivator and friend of American husbandry is seen to realize much of that which at first he only hoped might, in process of time, prove to be possible; and thus it is that Agriculture is destined to undergo still greater ameliorations, of which the ignorant, the slothful and the desponding have yet no conception—ameliorations that proceed by geometrical ratios; for in this, as in other sciences, every advance that is made shall add to the hight and the strength of the scaffolding employed in making additional improvements.

So marked and extraordinary have been the strides made in the application of the sciences to the art of cultivation lately in Scotland, that Professor Johnston has predicted that, within the next five years, prescriptions for particular manures having reference to the next succeeding crop in a given rotation, would be made out as systematically, and with as much confidence in the results of their application, as are the medical prescriptions of the physician to the apothecary. Nor is this evidence of the progress of agricultural science in that country to be wondered at, when we read, as in the last Edinburgh Review, that the writer, descanting on the increased productiveness of the lands in England and Scotland, by which these countries have been enabled, until now, to meet the demands of a steadily increasing population, remarks that on stepping into a country school on the wayside, in Scotland, he witnessed an examination of a class of "poor barefooted boys" of 14 years of age, who were going creditably through a close catechism in Agricultural Chemistry.

But we have been insensibly drawn off from the sole design of *presenting a few of the signs* of a general change in favor of special education for the plow,

as for all other things, when it is intended that he who is to follow any particular pursuit shall rise from the level of the operative to that of an intellectual director of the force employed in carrying it on. These evidences of change are to be found, among others, in the more frequent references to the interests of Agriculture by *our Governors in their Inaugural Addresses;* almost all of them appearing now to think it incumbent on them at least to recognize the existence of such an interest in the State, while it is to be remarked there are yet some of them who deem it not worthy to be referred to—as if the land and the capital embarked in its cultivation were not subjects for legislation, and in no way liable to be affected by good or bad government. We see these signs of favorable change, too, in the appointment, of late years, of *Committees of Agriculture*, in legislative bodies; some of whom even go the length of making reports—however yet, for the most part, vague and general, and in empty compliment, rather than practical contribution to this, by far the most important in the whole catalogue of legislative cares; but begetting the hope that, ere long, we shall see Congress and State Legislatures putting forth and circulating Reports—not such as cost $20,000 for diatribes from every conceited scribbler on the potato disease, but elaborate dissertations on the condition and wants of Agriculture, such as we have annually from the ablest minds of the country, selected on that account, and placed on Committees to elucidate the interests of commerce, manufactures, and the condition of the financial and military branches of the Government. And who can hesitate to believe that the country would be as much benefited in its growth and advancement to wealth and power by having its *agricultural concerns and capabilities thoroughly overhauled and illustrated* by such men as CALHOUN, and LEWIS, and BERRIEN, and CLAYTON, and BENTON, as by the Reports we have printed and circulated, by the thousand and tens of thousands, in reference to navigation, manufactures, finance, and war? Ay, and how much better and more generally might we expect the rights of American husbandry to be understood and guarded from the encroachments of parasitical classes, if, under the beneficent influence of such annual expositions by our ablest men—those whose sole business it is—the yeomanry of the country were steadily and systematically educated in all that relates to the cultivation and the rights of the soil, and its claims to precedence in all legislation for particular branches of industry! But, alas! what farmer of common observation has not learned that, where the master is notoriously ignorant or inattentive, he soon becomes the victim of dishonesty and neglect on the part of his manager and his men?

Another indication of an improving public sentiment on this interesting subject, encouraging to the cause itself, and honorable to the discernment and patriotism of the mover, is the following Order, following up a kindred movement some years since by the enlightened Chairman of the Committee to whom this Order was referred in the Senate of Maryland:

IN SENATE, January 19, 1847.

On motion of Mr. Gaither, it was

"*Ordered*, That the Committee on Agriculture inquire into the expediency of providing by law for the inspection of guano, and the appointment of an inspector thereof; and, also, that said Committee take into consideration the best means of diffusing among the people of the State information on the subject of agricultural chemistry, and such other subjects as may, in their judgment, be best calculated to benefit the agricultural interests of the State, by teaching such knowledge of the composition and application of manures as will promote the improvement of the exhausted soil of the State; and that they have leave to report by bill or otherwise."

And here, again, what a proof is exhibited of the slow progress of knowledge and of discoveries in aid of Agriculture! Twenty years have elapsed since the

writer of these lines distributed gratuitously two barrels of guano, sent to him for that purpose all the way from the Pacific, by Commodore RIDGELY; but, until its value was lately promulgated in England, no effort was made to extend the use of it; and now, after so great a lapse of time, and after the English have removed entire islands of it, we see a Senator very judiciously moving to have an inspection of *guano* established by law!

But, among the most encouraging proofs we have that the truth of Professor Liebig's declaration—to wit, that for all permanent and material improvement we must hereafter look to the application of the sciences to Agriculture—is making its way to public conviction, is the one to which we have before referred—the spontaneous and unassisted establishment of *agricultural schools* in various parts of the country, and in advance of a more enlightened legislation by which, in a few years, the public will require and compel them to be upheld and placed, as they should be, in possession of all those advantages of emolument and distinction which can beget confidence and respect in the eyes of the good and the wise—on a footing, in a word, somewhat approaching at least to that which has been for years past provided, at *the public expense*, for MILITARY SCHOOLS, where large salaries and most ample free quarters are furnished for Professors in military and civil engineering, in chemistry, mineralogy, botany, French, drawing, &c., for the better instruction of *paid* students destined for the Army and Navy.

Another token, not to be mistaken, that the public mind, no longer content with mere isolated facts(which thirty years ago it was useful to accumulate,)and the exhibition of extraordinary fruits, is now disposed rather to enter into the *philosophy* of this great department of national industry, may be found in that change which is going on in the *objects designated as proper subjects for premium*. There is evidently an increasing impatience at the sight of stereotype offers of premiums for the biggest crop of corn on an acre, the heaviest year-old pig, the best-gaited gelding, the fattest yearling calf, and the largest mule. Time was, in the infancy of associated efforts, when we had just entered on the threshold of agricultural inquiry, that the cause of improvement demanded actual exhibitions of mammoth pumpkins, and large potatoes, and turnips, and cabbages; and more especially when it was useful to stimulate experiments with *mangel-wurzel and Swedish turnips*, and other vegetables theretofore untried or but partially known—as it might be now to test more extensively the suitableness of the soil, climate and circumstances of our country to the cultivation of *madder*, and *woad*, and *silk*, and *Lucern*, and *rye-grass*, and *Jerusalem artichoke*, the *citron* and the *olive*, &c. It was well, in the infancy of associations for improvement, to test the weight, activity and strength of animals employed or used for various purposes; and even yet it is highly beneficial to keep up such exhibitions. But why? Not to draw a crowd by the impulse of an idle and vulgar curiosity, which finds its highest gratification in the sight of monstrous products of Nature and of art. All such men of such minds had better at once be directed, for light and momentary gratification, to the museum and the circus. Such displays of monstrous products are only useful to rational minds, when exhibited in a way to illustrate the principles of their production, and to enable us to judge how far the materials and processes made use of in procuring them are to be sought out and imitated, or rejected and shunned.

Hence the wisdom of the *law* of New-York relating to Agricultural Societies. Foreseeing, apparently, that the *Trustees of Societies* could not be relied on to exact such statements from competitors for premiums, the law has *expressly pro-*

vided that, "before any premium shall be delivered, the person claiming the same, or to whom the same shall be awarded, shall deliver in writing, to their respective officers, as accurate a description of the process in preparing the soils, including the quantity and quality of the manure applied, and in raising the crop or feeding the animal, as may be; and also the expense and product of the crop, or of the increase in the value of the animals, *with the view of showing accurately the profit* of cultivating the crop, or feeding or fattening the animal." Too truly, however, has the enlightened Secretary of the Commonwealth of Massachusetts, to whom the Reports of the Societies of that State are made, remarked—"But the misfortune is that these rules are *imperfectly or not at all complied with.*"—These statements, in detail, should not only be rigidly exacted by the Trustees, but they should undergo deliberate examination, and be either ratified or subjected to strict and impartial commentary and criticism. The vagueness of these statements, where they are made at all, often takes away from them all character and pretension to usefulness; and the carelessness, not to say partiality with which the premiums are too often awarded along with them widely sows feelings and expressions of dissatisfaction, "not loud but deep;" and this accounts for the great difficulty of making up the required subscriptions, and for the final discontinuance of many of these associations.

To return to the character of these shows. It may be alleged that, without the multifarious and attractive elements employed in "getting them up," the people could not be brought together; and therefore we must needs take the frivolous along with the useful—that those must be amused with the shadow who have not sense enough to distinguish it from the substance. And this may all, to a certain extent, be admitted, until by degrees public opinion shall be reformed by better systems of agricultural education, and these associations for useful purposes shall cease to be mere gull-traps. In the mean time, all men of sense and of exalted and patriotic views, taking part in the direction of such institutions, will earnestly lend their thoughts and their influence to a gradual correction of the public taste in these respects—leading it to seek for the useful instead of the showy—the intellectual in preference to the ridiculous—until, in process of time, valuable instruction and solid scientific advancement in Agriculture shall take the place of prodigiously prolific patches of grain and vegetables, and fat hogs, and cows with three calves, and other wonderful phenomena of the animal and vegetable kingdoms. Thus may we expect to see reason and philosophical deduction take, in Agriculture, the place of custom and prejudice—as superstitious star-gazing has given way to astronomy, and the reveries and pretensions of the alchemist have been superseded by the noble science of chemistry.

In this view of these subjects, it was well observed by Mr. Bryant, in a Report to the Hampden Society in Massachusetts, remarking on great crops of vegetables—"But in order that we may have these results, to any extent, *under our control*, the *science* of Agriculture, in all its hidden recesses and wonderful mysteries, needs to be explored."

Much as these remarks have been extended beyond our expectations, we must yet take room to refer to another most propitious sign, in the declaration, by the "FARMERS' CLUB OF THE AMERICAN INSTITUTE," that "there are *now* constant inquiries by wealthy merchants, professional men, and others, for *schools of this character*, engaged in a safe and healthy employment, *free from city habits and temptations.*" Something of a solecism, it is true, is observable in this declaration, when connected with the averment, in the same petition, that "the City of

New-York is a fit place for a college and for a trial farm;" at all events, there is great comfort in their declaration, with their opportunities of judging, that "the useful arts, *especially Agriculture, are required by public sentiment* to be *elevated to their highest possible rank.*" But, for our humble selves, we confess that reflection would prompt us to locate such a school beyond the contaminating allurements and vices of a large city; nor would we have the course and branches of instruction, in an Agricultural Institute, connected with the study of any other "arts" or sciences than those which are immediately allied and auxiliary to it, for we should strongly apprehend that, in all such partnerships, these other "arts" would be artful enough to appropriate to themselves the lion's share—taking to themselves, sooner or later, all the choice pieces, and throwing the offal to the unpretending rustic member of the firm. Thus has it proved, so far, in all that has been done for Education by the Governments, State and Federal, and even in institutions founded on the voluntary contributions of farmers themselves; for, how little is taught in any of our colleges in direct aid of *agricultural researches* and industry? We shall soon see what better, if anything, will happen in the arrangements and conduct of an Institution founded on the munificence of a foreigner (the subject of a great nation for whom we are taught, even from the nursery, to entertain a deadly antipathy), expressly for the "increase and diffusion of useful knowledge among men." We may be permitted, however, to say —and we do it with the greatest pleasure—that we have heard enough of his sentiments on the subject to inspire strong hopes that, in the learned SECRETARY of the "SMITHSONIAN INSTITUTE," Agriculture will have an advocate duly impressed with a sense of its paramount importance, and with the exceeding *usefulness* of all knowledge that may serve to enlighten its practice in the field, and to place it where it deserves to stand, in the front rank of our industrial occupations.

Finally, we feel it to be a sort of duty to exhort all those in the several States who take concern in the kindred causes of education and Agriculture, to use their influence to have agricultural books, and branches of study that bear upon Agriculture, gradually introduced into the schools already in existence. Here a beginning may be made. Here, even in the way of amusement, the youngest boys may learn the natural history of all domestic animals—the principles to be consulted in all endeavors to modify their forms. Here they may learn, before they set out in life, the natural and commercial history and medical and artistical uses of all grains and plants. In this way the rising generation, instead of wasting their youth in the perusal of trashy old stuff, nonsensical or pernicious, may be so reared as to leave school already endowed with a vast fund of elegant and useful knowledge, such as they will never acquire if not inspired in youth with a taste for reading. Every sportsman knows how difficult, if not impossible, it is to take a lazy old hound, whose habits are fixed, and break him in to be a leader in the chase! To give him the keenest relish, you must take him out cub-hunting, and let him be "blooded" when young. So must we be blooded, as it were, to the love of that greatest of all blessings, the love of knowledge and of books, when we are young; and common sense suggests that it should be in the love of the books and the knowledge that will give us pleasure and efficiency in the practice of the pursuit *by which we are to live.* The community that neglects this obvious duty to the rising generation deserves the fate of the mother whose son, under the gallows, for her neglect in not punishing his first theft, *bit off her ear.*

P. S.—We have just, by chance, heard of an evidence of the feeling that is spreading on the subject of agricultural education, so gratifying that, without the least suspicion on the part of him to whom it does honor, we cannot forbear to mention that Dr. Williams, the worthy President of the Senate of Maryland, has tendered 100 or 150 acres of land for the establishment of a well organized Agricultural School. That, we believe, is more than the United States Government has done for *civil* education in any of the *old* States, whose blood was shed to acquire the lands so freely given away in the new.

Finally, *Memorials*, on the principle of the one sketched in a late number of THE FARMERS' LIBRARY, have been lately presented, with numerous signatures, from various counties, to the Legislatures of New-Jersey, Delaware and Maryland, calling on these bodies to demand, through their Representatives in Congress, some assistance for the establishment of Normal Schools, for the preparation of teachers qualified to give instruction in the Public Schools of the State in the sciences allied to Agriculture. We want nothing now but that sympathy and support of the *press* of the country, which so quickly responds to the voice of *particular classes.*

CHEESE DAIRIES IN VIRGINIA.

MAJOR STEVENS'S RECIPE FOR MAKING WELSH RAREBIT.

ARE you, Mr. Editor, sufficiently observant of the *progress* of the arts to know that the art of manufacturing *cheese* is traveling southward close on the tail of *the red fox?* The latter has but very lately crossed the line from the Old Dominion into the old North State, somewhere about Milton, and the former has been yet more recently established in the mountains of Virginia.

Doctor P. THORNTON, whose ideas of what may be useful and feasible have been observed to march in advance of his neighbors, has lately procured, from the North, a very respectable and intelligent person, acquainted with the business, to establish a cheese dairy at MONTPELIER, a most delightful residence, as its name imports, situate in a charming valley between the mountains of Rappahannock; and most excellent, I can truly say, are the specimens I have seen and tasted from the Montpelier dairy—far more palatable to my taste, than much of the dry, husky, so-called old English cheese they give us at many of the hotels. The color is of the right cast, while in richness and flavor it is all that could be wished, unless it be that, perhaps, for want of age, it may not have reached that *haut gôut*, or attained that degree of *active liveliness* which the more pampered and delicate palate of the epicure might demand. We have heard, also, of other movements for the establishment of *cheeseries*, far back from tide water in Virginia; nor does there seem to be any good reason why they should not be reasonably profitable—I say reasonably, because we are all for making money too fast. It is time we had learned—for we shall have to learn that they are fortunate who by the utmost diligence and economy can support their families decently and make both ends meet; nor can that be done in many cases, unless all—yes, all—who *consume*, are made to *produce*.

In the mountains and valleys far back from tide-water, and to and from which transportation is expensive, they have the grass in summer and the fodder and corn in winter too distant to be sent to market, and more profitably convertible

into cheese than butter, because it is easier to accomplish in its manufacture a certain degree of excellence. The quality of cheese is more likely to be uniform than that of butter, while it is more easily preserved, more conveniently transported, more salable in neighborhoods distant from tide-water cities, and more exchangeable for articles which will bear keeping until they can be sent thither for sale. Those who, like Doctor T., pioneer in all reasonable enterprises to establish new branches of industry, are entitled to the thanks of all to whose benefits the results may enure; and even though such enterprises may sometimes fail, those who project them have a right to enjoy the self-satisfying reflection that if they have not succeeded, they have done more: they have deserved success. Who has not observed that he who is destitute of all spirit to try new things is among the first, when anything fails, to exclaim, "*Ah, I told you so!*" "*I knew it!*" Were the world regulated by such men, sheep-shears would never have been invented, and we should see these wise men, who can foresee everything, after it happens, still plucking the wool from their sheep, as old women pluck the feathers from their geese, *by the roots!* What is wanting, Mr. Editor, on the part of American agriculturists, as you have said, to diversify their staples and to make more out of their means, is, more reading, more inquiry, more reflection, and more enterprise—more energy, in a word, to *do!* to *try* and to have less of what they call "a great mind" to do so and so, which usually ends in a little greater mind to do nothing. But, returning to the manufacture of cheese, one is naturally led to think of *cows*, and, in that connection, to remark, that the accumulated evidence in favor of the truth of M. GUENON's theory about the marks that indicate good and bad cows, makes it obvious that every one, whether he be on a small or larger scale a manufacturer of cheese and butter, or whether he be an humble cotter, with but one "hawkie,"

"That 'yont the hallan snugly chows her cood,"

yielding their chief sustenance to his little family, all should be alike familiar with the *marks laid down in the "Cow Book;"* for, being guided by that, he need never own a bad milker. That little book should hang on the breast of the chimney, on the same nail with the Almanac. RUSTICUS.

PATERSON, N. J. December 19, 1846.

Dear Sir: I have read with great satisfaction M. GUENON's work on Milch Cows, by which one can judge by certain infallible signs the milking qualities of the animal. I have compared the marks he gives for his first grade Flanders cow, and find they correspond with the escutcheon of my favorite Devon cow *Ellen*, that has taken the first premiums at the last two Cattle-Shows of the American Institute. My farmer has great faith in M. Guénon's work, and so has one of my neighbors, a knowing Scotch milkman who keeps fifty cows. He says that after careful examination he places confidence in these marks, and they will govern him in his future purchases.

I return you my sincere thanks for giving to us farmers this valuable treatise of M. Guénon. I shall hereafter make my selection of the calves I will raise from my choice stocks from the marks given by this author. I think every farmer should own this work.

With regard, yours, &c. ROSWELL L. COLT.

To the Editor of the Farmers' Library.

---

*Apropos to Cheese....*RECIPE FOR WELSH RAREBIT, *from Maj.* SAM. STEVENS, *Shades Hotel, Thames-street, New-York City—the highest authority and the head-quarters in all the United States for Ale and Welsh Rarebit:*

'Presented by Maj. STEVENS, with his most respectful compliments, to Mr. SKINNER, Assistant Postmaster General, and in conformity with his promise. May good digestion wait on appetite. New-York, January 28, 1845."

Select the finest *new* cheese you can procure; chop it very fine; put at least a quarter of a pound into an iron or tin sauce-pan; add a little beer or water; stir it over the fire until perfectly dissolved; have your slice of toast on a warm plate ready to receive it; pour it over the toast, and serve it up immediately. Use for dressing, mustard, pepper, and salt, as you like it. The above furnishes a Welsh Rarebit for a single person.

SOFTENING DEW AND WATER-ROTTED HEMP.

INQUIRY BY A MANUFACTURER.

PATERSON, Jan. 6, 1847.

Dear Sir: I wanted to see your new books and talk farming; but more especially to ask you to make inquiry of some of your *Kentucky* friends as to the process they have in practice there for softening Dew and Water-rotted Hemp, to render it as soft as Flax. They do this here, and in Scotland, but it is by a very imperfect machine and cumbrous withal. In Kentucky, I am told, they do it at little expense and less trouble. If it can be done well, it would bring this hemp into very extensive use. I have done it very successfully without the aid of a machine; but a gentleman from Kentucky, visiting me, assured me it was done better, with less trouble and expense, in that State.

If you should get any information regarding it, I hope it will be of such a character as to avail of the process without farther inquiry. If it be a machine, let us have a drawing; if a chemical agent, let us know what it is that is to be applied to produce the desired effect.

Very many happy New-Years to you from yours, truly, JOHN TRAVERS.

J. S. SKINNER, Esq.

We hope the above will fall under the eye of Mr. Anderson, of Louisville, or some other gentleman of experience and public spirit, who will give us the information desired. By-the-by, we had hoped to hear again from A. before now; but were we asked, On what claim? we should be *nonplussed*, as they say in the Slashes.

THE PLOW,

AS ILLUSTRATIVE OF THE PROGRESS OF AGRICULTURAL IMPROVEMENT—OBJECTIONS TO *MONEY* PREMIUMS.

HAVING on various occasions alluded to the labor-saving inventions and changes in the structure of agricultural implements, and the admitted progress which is making in the knowledge of the composition and use of manures, the vast improvement in fruits and vegetables, as well as the additions to both—and to the better understanding of the principles of breeding, rearing and fattening our domestic animals, within the last half century—as arguments which should at once put to shame and disarm the opponents of "book knowledge" and of public expenditure for agricultural education, it may not be without its usefulness to go back to some facts in the history of that king of implements, the *Plow*—not back to the time, long since the discovery of America, when the hauling of the plow "by the tayle" was forbidden by act of Parliament, but to the comparatively very recent period in our own country, and even in our personal recollection, when the *wooden* mould-board and the *wrought*-iron share, gave way to *cast-iron*, against all necessity or promise of usefulness, in the opinion of those wise disciples of the stand-still school, who, time out of mind, have contended that we are already standing on the topmost round of the ladder of all useful discovery. It may be some gratification to those who entertain at least an innocent curiosity to be instructed in the *history* of Agriculture to see how modestly and cautiously the first use of the *cast-iron share* was announced: and yet how short was it of the superb cast-iron plows now produced at all our great manufactories of agricultural implements!

In the "Transactions of the Society for the Promotion of Agriculture, Arts and Manufactures," so highly honorable in its origin and proceedings to the LIVINGSTONS, the L'HOMMEDIEUS, the MITCHELLS and DE WITTS in those palmy days.

of the Republic, Col. JOHN SMITH communicated to the Society that in the last spring and summer he had used "the cast plow-share which had been exhibited to the Society at their meeting during the last session of the Legislature, and found it to exceed his most sanguine expectations." "It is," said he, "cast in the form of a Dutch share, after the best model that could be procured by the Society, with this exception, that the edge is not complete, and not so wide, by about three inches, as it will be when finished with the false edge, which is made of wrought iron or steel, and fastened on with rivets. The soil in which I used this share was light and free from stone, though I *believe*, with *careful* usage, it will answer in any other soil, although the same may be stony and incumbered with stumps. This plow-share, besides answering every purpose of those made of wrought-iron, will last to plow as much as two of the latter before it is worn out, the cast-iron being nearly as durable as steel before it is hardened. By this experiment it is very obvious that the cast plow-share will be very beneficial to farmers, and ought to be encouraged by this Society. They may be had of Mr. Peter T. Curtenius, in New-York, either with or without the edge, which is made of wrought-iron or steel." Thus might we dwell, could we believe it necessary, on the invention, within the period designated of *Pennock's horse-rake*, on improved *threshing-machines*, and *cutting-boxes*, and *corn-shellers;* and though last, far from being the least, on the modern mowing-machines of Hussey and Hotchkiss and others, to show not only that the course of agricultural improvement has been progressive, but that the rate of its progress has been just in proportion as its wants have engaged the attention of ingenious minds, and even in spite of those denouncers of all book knowledge and all application of science to the subject—your wise men, only in their own conceit, who ever hang like dead weights on the wheels of useful discovery, and whose counsels would have still kept us in the use of the *hand-gin*, the *wooden plow*, and the *truck-wheel*, "when it required two yoke of oxen and a horse to speed the plow, and tin horns and sleigh-bells to stop the speed of bees going off to swarm." Our agricultural annals show still greater improvement since that time in this important implement, the plow, than was characterized by the change from the wooden to the iron mould-board, until now, even the most sanguine may be excused for doubting whether we have not reached the highest attainable degreee of perfection. Take, for illustration, the following extract from the Report of F. W. Gale, Esq., on Agricultural Implements at the Worcester (Mass.) Show, in the autumn of 1845:

The Committee commence by saying that they believe this department, of mechanic tools and agricultural implements, affords facilities for farmers and mechanics to obtain a knowledge of the various new and useful tools and implements which science [mark you, reader, science,] and active invention are constantly supplying, that cannot, generally, be obtained in any other way. And then they proceed to observe, in respect to the show of plows: Messrs. Ruggles, Nourse & Mason contributed their usual quota toward the exhibition. *Twenty-nine varieties of plows*, a corn-sheller, a vegetable-cutter, an improved harrow and a well-made road-scraper were sent in by them. It seems almost incredible that so many kinds of plows can be necessary for all soils and situations. But your Committee do not hesitate to say that, in their opinion, the *peculiar and distinctive merits of each are visible upon trial and explanation.* Many of the improvements upon the old-fashioned plows, which these gentlemen have introduced and adopted, are already so much in vogue as to be known to all farmers; while others of later date have become known to only a portion of the agricultural interest. It seems to us that the farmer neglects his own real interest in neglecting to understand the peculiar utility of most of these improvements. An improved form of the mould-board, by which the soil is turned more easily and with less exertion to the hand than formerly, commended itself to the attention of all. The draft-rod upon plows of recent introduction, also those of meadow fixtures, used in reclaiming meadows, and capable of being removed, and the same plow used for upland plowing, deserve particular notice. The

chilted share and land-side manufactured by them are decided improvements over most plows now in use. A wheel at the forward end of the cultivator, has been recently added by them and greatly facilitates turning, regulates the depth, and steadies the movement of the implement. Their subsoil-plow, made upon precisely the same principle as one imported by them from Scotland, in 1840, has been simplified in construction, and reduced in cost from fifty dollars in Scotland to fifteen dollars in Massachusetts, of corresponding size. For this they deserve the thanks of every farmer. Every real improvement in any agricultural implement may be said, in one sense, to be an additional pair of hands, or at least an extra brace of muscles, to the farmer, which he gets without paying them extra wages. In this, view, too much encouragement cannot be given to those who are seeking to improve and perfect every kind of implement which the husbandman employs. Messrs. Ruggles, Nourse & Mason have for years exercised an indefatigable zeal and perseverance in this behalf, and have been rewarded with great success.

Your Committee recommend that a gratuity of *ten dollars* be given them, as a trifling though inadequate proof of the Society's appreciation of their indisputable skill and constant exertions to improve upon the past.*

And if so much has been realized, in spite of popular prejudice and pusillanimity, and in the absence even of all demand on the part of the landed interest for Government provision for *civil* as well as *warlike* education, who shall say what

* We cannot forbear the opportunity once more to suggest whether it would not at once indicate and help to form a better taste, were Societies to give their tokens of approbation in almost *any other shape* than that of *money?* There seems to be in a V. or an X. dollar note something so mercenary, so sordid, so incompatible in its very appearance and uses, with the fine sentiment of pride and love of distinction which premiums are, or should be, intended to promote, that really we could never bring ourselves to comprehend how it is that the distribution of these trifling sums, down as low even as one dollar—and that even to matronly housewives and young ladies, for beautiful samples of female ingenuity and industry—should be continued among refined people. What, for instance, is a *ten dollar note* to the proprietors of a great manufactory of agricultural implements? Yet even they might value something, the merest trifle, which could be exhibited to their friends and transmitted to their children, as a visible trophy won by their own ingenuity and public spirit. Much sooner, we presume, would Messrs. R. N. & M. have *given* the worth of the X. in some improved implement, selected by the Society to be labeled with its approbation, and placed in some public museum or repository of useful inventions. It is not the gross passion for money, the *auri sacra fames*, to which Societies desire to appeal in these cases; and if they did, such trifling reward would be inadequate—for that and the mere record of approbation itself would answer as well. How much more appropriate would have been, in a case like this, some small piece of plate, with a suitable scription, or some agricultural work, or work on mechanics, or the biography of some distinguished mechanician, a Memoir of Sir JOHN SINCLAIR, the great promoter of Agriculture, or of WATT, or ARKWRIGHT, or FRANKLIN, the printer, or PRATT, the tanner, or BURRITT, the learned blacksmith, or a copy of Ransome's work on the PLOW, or any agricultural periodical, as the Cultivator, the Agriculturist, the Farmers' Cabinet, the American Farmer—something, however trifling in cost, with an appropriate and enduring expression of the Society's approval of their ingenuity and enterprise—in short, anything but *a little money!* Even under the supposition that there exists in any community, which we can hardly believe, a feeling of preference for *l'argent*, on such occasions, over any other even less costly tokens of approval, the coarseness of such a taste ought not, by a Society, to be presumed or recognized, as we humbly think, much less encouraged. Education, the ennobling and salutary thirst for honorable distinction, can hardly be said to have effect where, for instance, a silver pen, with a gold blade, such as that which is doing this sad specimen of chirography, and presented by a fair lady, would not be far more valued than a V. note, even though the former cost but $2 50, while the latter would, in the open market, command 100 wt. of "pickled pork!" Well are we aware that such notions are not what are called "*practical*;" still we believe that in the long run the highest practical results are to be realized, by appealing to the highest and most elevated motives of action. Our notion may be "diseased," as Tom Tough says in the song; but if so, "it's a disease we shall die un." What we have ventured to suggest was not designed for this case in particular. The occasion has been used to say, in the way of a note here, what might as well, and perhaps better, have been set forth in a separate article; but we thought it as well to "*strike while the iron is hot.*"

The above reasoning does not apply to the premiums of one, two, or three hundred dollars, offered, as they should be, for elaborate, scientific, and really original and valuable essays, which demand great labor and research, and which necessarily occupy much of that time which their authors are forced to dedicate to the, after all, inadequate support of their families. In such cases, the successful author may be said to be employed in the line of his profession, and though the honor of winning the prize constitutes a large part of its value in such cases, yet something else must be had, to use a common but significant expression, "to make the pot boil."

Societies that find it difficult to get subscribers at $3 (or even, as we have known in some cases, at 50 cents) a year, think nothing of calling on a man who has nothing but mental labor to depend on, to furnish them with an essay or an address, involving as much labor as, in the way of business, a lawyer would expect to be rewarded with at least a $100 note. *Ed. Farm. Lib.*

improvements and what amount of knowledge might not have been realized for Agriculture under the same favor of public opinion and equal expenditures of Government, which have served to promote the growth and spread of knowledge in respect of all other pursuits, and more especially of that one whose aim is to kill the greatest number at the greatest distance, and with the greatest economy of time and materials! For is it not one of the greatest problems of the day and the Government whether *cotton* may not be employed to destroy the human race at less expense than *saltpetre and brimstone?*

CISTERNS.

We are glad to lay our hands once more on the following. We lately said that no one need want good drinking water who had roofs to their houses. These cisterns afford the best sort of drinking water, when iced; and the quantity is surprising which the roof of a dwelling house will supply. Here is proof that no one need want a supply of water in his kitchen, and in his chamber for washing and bathing, at a comparatively small expense.

We lately saw a cistern at Mr. Buck's in Hartford, Connecticut, which, we understood, was made altogether of cement without any brick; but what Doctor Jones has done, assurance may be felt is thoroughly well done—he has that *old English way with him.*

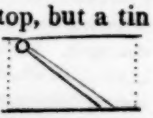
J. S. Skinner, Esq. Washington, Sept. 16th, 1843.

Dear Sir: I send you the following items respecting the dimensions, structure and cost of my rain-water cistern. It was dug 7 feet in diameter, and 10 feet deep, is paved with hard brick, laid in hydraulic cement; is walled up with a 4-inch wall, well bedded in hydraulic cement; a thin grout of the same was poured in between the bricks and the ground, every four courses, so as to leave no interstices. A perfect coat of cement is plastered over the whole interior.—The top is formed of two flag stones, making a square of 7 feet. This is less costly than a crown of brick-work, and takes nothing from the interior of the cistern. One of the stones is perforated to admit a pump, and the opening constitutes a man-hole, when it is desired to clean out the cistern.

The following is the cost:

Digging	$ 8 00	Bricklayer's Bill	$16 68
Brick, (hard) 1800 at $7 per M	12 60	Flagging for top $15; cutting hole $1	16 00
4½ bbls. of Cement at $2	9 00	Total	$63 28

I admit the water through a cast iron pipe, about a foot below the top, but a tin pipe passing through the flagging would answer perfectly well. An opening the size of a half brick is left below the flagging, to discharge the waste, and this is closed by a gate to keep out insects, &c. thus:



A cistern of this size will contain about 1900 gallons, or 35 hogsheads at 54 gallons to the hogshead. Each foot in depth contains 190 galls. or 3½ hhds. the diameter being 6 feet 3 inches in the clear. One of 8 feet in the clear would contain about 312 galls. or 5 4-5th hhds. for every foot in depth. Should greater capacity be required, make it deeper but no larger in diameter.

A pump and lead pipe will cost about $12.

I shall use two pumps, one in the yard and one in the kitchen; the latter will be a force-pump, to raise the water into a bath room in the third story of my back building.

Any other particulars which I can furnish will be cheerfully communicated by

Yours truly, THOS. P. JONES.

To Prevent Hares and Rabbits from Barking Trees.—Mix soot and milk until the mixture acquires the consistency of thick paint, and apply it with a paint brush, choosing a dry day, if possible, for the operation: once a year is sufficient.

DIBBLING WHEAT.

WITH INTERESTING REMARKS ON THE CHANGE IN THE CHARACTER OF WHEAT SINCE THE FIRST NOTICE OF IT IN THE DIVINE RECORDS.—OREGON CORN.—ENGLISH AND AMERICAN EXPERIMENTS.

Its character since its first notice seems to have changed. In the Divine records we are told of "seven ears" coming up "in one stalk, full and good;"* and this appears to account readily for that and the adjoining countries bringing forth such tremendous produce as "an hundred fold," or at the rate of two bushels seed per acre—a produce of 25 quarts to the acre!

Now, however, we never see more than one ear spring from one stalk; our climate seems to have the unaccountable tendency to diminish the number of ears to one, while in Egypt six or seven ears are no uncommon occurrence. The wheat plant appears to possess a wonderful power of reproduction under favorable circumstances; and the capability to form ears out of stems seems in this country to be developed in producing stems from one root. The writer has in his possession at this moment a root of wheat of the creeping red variety, which was given to him by Colonel H. Croft, of Stillington, in Yorkshire, which has seventy-two stems from it, full and vigorous as is possible to conceive. It is another extraordinary property of the wheat plant that it possesses, polypi-like, the power of being subdivided in an almost infinite degree. Mr. Lance, of Lewisham, obtained by transplantation in some roots, 40 to 50 stems, with ears from six to seven inches long, and in one instance obtained actually the extraordinary number of 190 ears. Mr. Miller, of Cambridge, produced from one grain of corn 3¾ pecks, or nearly one bushel. Mr. Fulla, of Newcastle, in an experiment on sowing wheat, gives the following comparative results:

No. 1, transplanted into	6-inch lines,		62½ bush	per acre.
No. 2, ..	.. 9	..	56¾ ..	..
No. 3, ..	.. 12	..	61 ..	..
No. 4, drilled	.. 12	..	65¾ ..	..
No. 5, broadcast,			58 ..	..

The above are given by no means as advocating or recommending the practice. It is evidently illusory as regards a farmer attempting it; and doubtless the situation was such, when the trials were made, as no farmer could possibly have, except perhaps on the remains of a celery or cucumber bed; but it proves the amazing capabilities of the wheat plant to reproduce its kind, with a degree of fecundity equaled only by its utility to mankind.

R. L. Colt, Esq., at Paterson, in the autumn of 1845, dibbled 1 quart of wheat on less than a tenth of an acre; and, though much of it was blown down by a heavy storm, and much depredation was committed by his poultry, which are of all imaginable kinds, he cut and threshed 156 quarts of beautiful wheat. He has put in an acre this year on the same plan, and promises to give us the result.

He has this year reared some Oregon corn, generally upward of 12 feet high. On one stalk, without selection, he had 4 ears of 24 rows each, and 1200 grains to the ear. Here, then, is the astonishing production of 4,080 for 1; but Mr. C. thinks this species of corn will not answer for this northern region.

Mr. Colt is one of the few (for the public it might be better if there were more of them) who, being able, farms for his own amusement, and to see, not how much money can be made—for that is not a "part of his sastim," as O'Toole says—but to see what may be done or introduced, that may be useful and turned to account, by economical and practical men, for the general good of the country. Would that all men of means were actuated by the same enlarged and generous views! and that their whims or fancies would in a greater number of instances take the same bent in favor of Agriculture and Horticulture! Even their failures, when they try experiments, are more useful than the successes of churls who hide their lights under a bushel. A lump of selfishness may make a suc-

* Genesis, ch. xli., v. 22.

cessful voyage; and the proverb says, "a fool for luck;" but there 's no mistaking the motives of him *who plants buoys.*

We have lately looked with pleasure at Mr. Colt's immense heaps of manure, in which it would be hard to say what *there is not!* Old shoes and hats; dead cats, and dogs, and horses; bones, and rubbish of all sorts from the streets; the mortar from old houses repaired; and all the night-soil of a town of 12,000 population, well to live, which, with some plaster of Paris, is converted into poudrette. To all these are added charcoal dust of several foundries, which he gets for the cartage; to these, again, large quantities of anthracite ashes, on same terms, and then the waste of two large paper-mills, with the liquor from the bleaching of the same. Thus, it is easy to imagine, will his lands soon be restored, which had been exhausted by the old Dutch system of "always taking out of the meal-tub, and never putting in;" and, where that will soon come to, Poor Richard has told us; and he who does not take heed, sooner or later will be rapped over the knuckles or—*tapped on the shoulder!*

MIGRATION FROM NEW-YORK TO VIRGINIA.

The following is from a gentleman of superior worth and intelligence, known to the Editor of THE FARMERS' LIBRARY. It has not been long since he removed from Albany, where he was generally known and as generally deservedly esteemed.

[We were compelled to decline the invitation; in the meantime had said about all that is necessary on the subject of FARMERS' CLUBS. We have propounded various questions to the Club, through our correspondent, and doubt not that the more detailed information we shall receive will be worthy of communication.]

J. S. SKINNER, Esq. LAKE BORGNE PLACE, Prospect Hill, Fairfax Co. Va. Dec. 14, 1846.

Dear Sir: Before this reaches you by due course of mail, you will have seen our mutual and excellent friend, and my most valued and esteemed neighbor, Com. JONES, who will have communicated to you our desire and most earnest request for an Address from you on the occasion of the organization of our "Farmers' Association" at this place early in January. I trust you will find it convenient to spend a few days with us: as well for this purpose, which I know you have at heart—the improvement of our Agriculture by means of associated intellect—as for conferring on us the pleasure of your society, and enabling us to extend such hospitality as may be in our power to one so highly esteemed and regarded as yourself.

You will perceive by the *nom de guerre* which I have given to my future farm, that I am not unmindful of the gallant services which Com. Jones rendered to his country in time of peril, in the famous naval action near Lake Borgne, in the vicinity of New-Orleans, a few days only preceding the great battle of the 8th Jan. 1815. Having purchased some eighty acres, part of and adjoining his extensive and well cultivated estate, I deemed it a fitting mark of respect to give to it an appellation which should at least testify my appreciation of his character and services, if it accomplished no more permanent object.

I am, thus far, well satisfied with my position and prospects in this delightful portion of Virginia. The climate is exceedingly mild and agreeable; the society, in all respects, pleasant; and the soil—that portion of it, at least, which has come under my observation—rich and fertile, requiring only a moderate degree of industry, and a judicious application of capital, to render it fully equal to the most profitable soils of New-York. Much of it, it is true, has been inconsiderately exhausted by its former proprietors and left to "waste its sweetness on the desert air," but it is easily susceptible of reclamation; and there are hundreds and thousands of acres in this single county, within from five to twenty miles of one of the best markets in the United States, which may be obtained at prices

varying from $5 to $10 and $15 per acre, which, with two or three years of systematic culture, may be made worth from $30 to $40. The farm directly opposite my own, consisting of two hundred acres and having on it a large and well built two-story brick house, which alone cost the original owner $7,000, was purchased two years since by Mr. Sherman, (an intelligent and enterprising farmer from Connecticut,) for $5,200, or $26 per acre—and he has repeatedly refused $10,000 for it, a sum which he might command at any day he chose! I shall be very much surprised if lands of this description and quality are much longer suffered by Northern enterprise and skill to go a-begging for five, ten and fifteen dollars an acre. Quite a colony of immigrants—chiefly from the banks of the Hudson and Western New-York—have already taken up their abode in this vicinity; and a large amount of capital has been profitably invested in the cultivation and improvement of the rich soils thus taken up.

A few days since a colony of Quakers from Pennsylvania—a class of shrewd, intelligent, enterprising and industrious men, to say nothing of their well known religious principles, so eminently conducive to order, quietude and peace—purchased some three or four thousand acres near Mount Vernon, in this county, and I understand, intend occupying them at once. In short, I know of no investment which in my humble judgment—and in this respect you can correct me, if I speak unadvisedly—is capable of affording a more certain and compensating return, within, comparatively speaking, a brief period, as the purchase by an enterprising, industrious, practical Northern or Eastern farmer of a hundred or two acres of what are generally termed the *exhausted* lands of this portion of Virginia.

Since I have been here I have received numerous letters of inquiry as to the capacity, productiveness, resources, &c. &c. of these lands. My limited acquaintance with the surrounding localities and characteristic features of the soil, will not as yet permit me to speak, except in general terms, upon those points of greatest interest to inquirers: but I feel authorized, from what I have seen, to invite the closest and most rigid examination not only as to the susceptibilities of the soil, but the healthiness and salubrity of the climate, the advantages for disposing of the surplus produce of the farmer, and the general excellence of the society. To its genial breezes and sunshine I feel indebted, under Providence, for a complete restoration of health and strength, within the short space of two and a half months; and I do not know that I can more appropriately testify my gratitude for this blessing than by devoting myself henceforth, as it is my intention to do, to the practical culture of its noble soil.

Truly yours, S. S. RANDALL.

CUBA TOBACCO.—R. ADAMS, ESQ., of Virginia, has received through General Campbell, our Consul at Havana, a bottle of the seed of the far-famed Havana Tobacco, which he proposes to cultivate and to distribute in Virginia. All such enterprises are worthy of being noted, if only historically; but we have little expectation that in Virginia, except it may be in some warm, light land in the south part of it, the tobacco will retain its flavor in any remarkable degree after the first year.

In Maryland, the fine odor is strongly perceptible in the first crop, but in the third it is lost. We can see no reason why the culture of this sort of tobacco and the manufacture of cigars, should not be very profitable in Florida, if the seed were imported, as they might be, every year—protected as the article is by a high duty.

If Madder and some other things were protected in like manner, they might be produced with remunerating returns in our country.

We shall hunt up, for republication, an article of General Hernandez, of Florida, on the culture of Cuba tobacco.

By a friend in Natchez, we were furnished with a translation of a Spanish Essay on the subject, but the fact is that, in all modes and manners of cultivation they lag so far in the rear of us that, except perhaps in the handling, we could make nothing out of it.

PENNSYLVANIA FARMING

RECOMMENDED TO BE PRACTICED IN MARYLAND, NATURALLY A BETTER WHEAT COUNTRY.

THE following letter was written by a plain, practical, working Farmer, giving his views in plain terms—as one neighbor does to another—without any view of appearing in print. It need not be read with the less attention or profit, on that account. We are sorry to understand that farming is not improving as generally as might be wished, in a region so blessed by Nature with a rich and enduring soil and pure healthy atmosphere. If she does not keep pace with other sections, *query*, is it that her inhabitants despise book-knowledge; or is it, as some would contend, that they *read too much* of what is going on in the wide world of Agriculture? On reading, we solicited the favor of being allowed to publish it. If there be in it nothing absolutely new, there is that which cannot well be too often repeated.

UTICA, January 29, 1847.

Dear Sir: In my last letter I mentioned something relative to the improvement of land in Lancaster county. I am fully convinced that, if a proper and judicious mode of improving land was introduced into *Frederick county*, that in the course of six or eight years it would produce double to what it does at this time. I consider that part of this county, where I am acquainted, a *much better wheat-land than that of Lancaster county*, and, under similar cultivation, would bring *more wheat to the acre*. I would not dare to say that every farm would bring double. No doubt there are many good farmers here, as well as there; yet, I must say, I have been unfortunate in not meeting with many of that kind.

The most of all the farms within my knowledge both in the limestone, as well as the red-lands, have become deteriorated and inert from the circumstance of a wrong mode of farming. A uniform mode of shallow-plowing, say from five to seven inches deep—and that almost continually under the plow—with now and then a little starved crop of clover, and often the cattle turned on before it is six inches high: is it any wonder that these complaints are heard about bad crops? Nothing is a more convincing proof to me that plants derive a great deal of their nourishment from the air, seeing the crops, and considering the manner of cultivation. All land that has a good subsoil and what is generally called loam, is susceptible of improvement; and the only time it can be made available is late in the fall, after the subsoil has become saturated with the fall rains, the wetter the better. There ought, by all means, to be a heavy coat of something to turn down. The plowing must be a foot deep. Three inches or four of the subsoil which lies under seven inches, if well applied, would soon pay the State debt. What a pity to have so much hidden treasure unemployed and unproductive! When the genial rays of the sun spread a benign influence around in the spring season, causing man and beast and bird to rejoice, vegetation also rears its head to praise its Maker. This is the time also to prepare food, first for plants, and afterward for man and beast. Fermentation and decomposition then take place.

I would now say something about the deep-plowing: A considerable quantity of the five inches of subsoil turned up last fall, and frozen last winter, will now become available for the food of plants: amelioration takes place, it becomes friable and moulders down, becomes commingled with the top-soil, undergoes now a state of fermentation—a kind of chemical process; and here is also going on, at the same time, the decomposition of the vegetable matter turned under in the fall. Here is a fine range for the corn-roots to seek their supply—instead of six or seven inches, here are twelve. Here is a place to hide the roots from the sun, and here is a little cistern to hold water when there is a little to spare, to be drawn up by the rays of the sun when wanted.

As we have got through with the fresh start for improving the land—especially if it is possible, before planting the corn, to put a little manure on, as also fifty

bushels of lime to the acre—(this would be doing the thing right)—we will now leave you with this advice: Work the corn well early; be sure to have no work to do in it after it becomes a foot high. The next crop to be put in is wheat, the next summer. Commence plowing in May, harrow in June, plow in July, harrow in August, plow the third and last time the first week in September, and sow about the middle of the month. As soon as you have finished harrowing the wheat, sow to each acre eight quarts of timothy seed; then on with your roller, and roll all down smooth.

Then in the spring, to every six acres, one bushel of clover-seed. The next summer there must be *no stock put on before the first of July*, and be sure none the fall before except a few hogs, if they do not root, after the wheat is off. The next summer, mow the first crop about the first of July; and let the second crop stand, to be turned under as before, a foot deep. Now you have got one once through. This plan may be altered and changed to suit circumstances, as may be required. If wished, it may be put in *rye* after the wheat; or it might remain three years in grass. The field might be put in wheat the same fall, by cutting off the corn, but the grass will never succeed so well, and, therefore, I would never advise that plan. It is *large crops of grass* that will improve the land cheaper and faster than any other mode of improvement.

As I have spun out a pretty long yarn already, I will soon come to a close, after saying something about the subsoil and deep-plowing. If the land is light and dry, and the subsoil-land is open and porous, pervious to water, with a large proportion of sand, such land might be plowed a foot deep in the spring for corn. The fall, however, is the proper time for all subsoil-plowing, and no other time will answer for land when the subsoil is of a hard, stiff clay. The frost is the only and proper agent to commence the work of deepening the soil.

I really feel as if the boy was making an attempt to instruct the master. Well, if it should be so, I know you will attribute my saying what I have said to a pure intention.

To conclude the whole matter, a deep rich soil is indispensable, if you want good crops. Now, the great point is, let every farmer go to work. Let him not only work, but *read* and *study;* and the man that shall find out the most judicious plan of deepening and improving the soil, let him have a great monument raised to his memory. I am sure he would be more deserving *than if he had killed a thousand Mexicans.*

I see you are doing something on the subject of Agricultural Chemistry. I hope it will meet with favor; the subject ought to be introduced and encouraged everywhere. Respectfully, WM. TODD.

N. B. If I should have the pleasure of seeing you, I will then tell you the kind of a plow necessary to plow a foot deep, and many other things that may be entertaining.

To Hon. D. W. NAILL, Senator, Annapolis.

TO CORRESPONDENTS—ONE AND ALL.

THERE are many communications on hand that we should gladly have given in this number, if there had been space at our command. The necessity of going from home compelled us to supply the matter for this number earlier than usual. A short excursion in "Little Delaware" has confirmed our impression, that in Agriculture she is moving with a *go-a-head-ativeness* that will place her much in advance of some of her larger sisters. As to her *hospitality*, nothing need be said. The "OLD BLUE HEN" treats all sojourners within her borders as kindly as if they were her own chickens. We traveled within her limits nearly 100 miles, and though the purse was sometimes brought forth, it was never allowed to be opened—*openly.*

YEAST CAKES.—Any good liquid yeast will make good *cake yeast*, by working corn meal in it until it becomes stiff; let it set until it begins to rise a little; make it out in cakes, and dry it in the shade.

VEGETABLE FOOD.

VALUE OF THE INORGANIC INGREDIENTS OF VEGETABLE FOOD, AND PARTICULARLY OF THE PHOSPHATES.

To read the following, would, one would think, be sufficient, if anything were needed, to show the practical applicability of science to Agriculture, and the criminal supineness of agricultural communities in not providing for a stronger infusion of agricultural knowledge in the courses of instruction adopted in our country schools for the rising generation of American agriculturists.

How sincerely do we lament that the writer, and the few others our country can boast of like him, accomplished and capable, to exemplify the connection between science and field practice, have so little leisure to favor us in this way. It is, however, a matter for congratulation that the barriers which have separated theory from practice in the art of cultivation, are every day giving way, and the time fast coming when the practical farmer will solicit the good offices of the animal and vegetable chemist, inviting him to walk with him to his stercorary and his fields, as the surest means of securing for his vocation both respect and profit.

To the Editor of The Farmers' Library:

My Dear Sir: In page 6 of Mr. E. N. HORSFORD's Essay on the Nitrogenous Ingredients of Vegetable Food, is the following passage:

"The various forms of food derived from grains, herbage and roots furnish—
1st. Bodies containing nitrogen;
2d. Bodies destitute of nitrogen;
3d. Inorganic salts—
all of which are serviceable in the animal economy. The nitrogenous bodies, from their solution in the blood, form the tissues, the actual organism. The bodies wanting nitrogen contribute, by their more or less perfect combustion, to the warmth of the animal body; and the salts of the alkalies and alkaline earths (the inorganic salts) serve to build up the osseous framework, besides constituting an essential part of every organ of the animal system. Their values for the latter purpose are in proportion to the *phosphates* their ashes contain."

Hence will be seen the value of the inorganic ingredients of vegetable food, and particularly of the phosphates.

Mr. Horsford also states that the difference of the nitrogenous ingredients in different analyses of the same kind of grain probably arises from a difference in the soils in which the samples analyzed were grown. That the differences in the inorganic ingredients of the same kind of grain shown by the various analyses of the best chemists arise from the same cause cannot be doubted, and notoriously in the phosphates; for we find that when a soil is exhausted of this valuable ingredient, all the nitrogenous manure in the world, without phosphates, will not produce the cereal grains.

I will add, that in feeding young animals whose bones and muscles have yet to grow and enlarge, the importance of a liberal supply of phosphates in their food is too evident to admit of a doubt.

The phosphates, then, being clearly next in nutritive value to the nitrogen, it becomes a subject of the highest interest for the agriculturist to discover by what means, or if at all, he can increase the quantity of these ingredients in the grain and roots on which he feeds his stock.

This question has not yet been opened by the scientific agriculturists of Europe, and it is one the true solution of which of right belongs to the Public Model Farm and the Agricultural College; for it combines and links together experiment on the manure and, through the food, on the animal, the Alpha and Omega of Agriculture.

I have already stated in various publications, that analyses, made at my instigation, of Indian corn grown with guano, which contains the phosphates in the fittest state for immediate assimilation by the plow, show about 30 per cent.

more of this ingredient than the same grain grown on the same spot of ground with common barn-yard manure. Accounts from Europe show also that experiments with bones treated with sulphuric acid according to the recipes given, by which the phosphates are rendered soluble and therefore more immediately available to the plant than in bone-dust alone, have resulted in most surprising crops of fine and full-looking grain.

But the experiment has not yet been carried forward there by contrasting the fattening of stock with this grain, and with that grown under the influence of common manure. Nor have they yet continued it by contrasting the quantity of the phosphates in the grain of one year's growth, with that in the grain arising from this same seed sown the second and third years. It is far from improbable that treatment with superphosphate of lime (bones and sulphuric acid), or with guano, may, to a certain extent, add something each season to these valuable ingredients of food. This consequence theory shows to be of vast importance. With respect to the practical proof of this theory by the fattening of animals, I can only state that a few experiments made here with roots grown on guano soil have been attended with great success; much more, however, remains to be done before its value can be fully estimated.

What effect may be produced by such phosphated food on the milk, the butter, the flavor and quality of the meat, or the strength of bone and muscle, of course I cannot answer. My opinion is favorable toward the experiment, and the chief object of this communication is to call the attention of agriculturists to the subject in order that these experiments may be made carefully the ensuing spring. With respect, yours, J. E. TESCHEMACHER.

Boston, 12th Feb., 1847.

BARNS.

PLAN AND DISSERTATION ON THE BEST SORT OF BARN UNDER GIVEN CIRCUMSTANCES.

J. S. SKINNER, Esq. CHARLESTOWN, Jefferson Co. Va., Jan. 4, 1847.

Dear Sir: In this day of improvement and investigation, I hope it will not be thought amiss to ask the favor of you to solicit a strict comparison between the different kinds of barns—embracing the items of cost, convenience and utility; viewed as a house for stock and shelter for grain, hay, straw, &c. &c. Some prefer the four-sided barn, with stabling beneath, having but one front; others the eight-faced barn, with stabling beneath, with a door and distinct yard to each or at least to seven fronts, thereby being able to keep separate as many different kinds of stock.

It is urged in favor of the four-sided barn, that it is more simple in construction, particularly in the roof, and consequently cheaper, and that it can be extended to any required size by adding to its length. This is conceded; but the object in view is to ascertain whether an eight-faced barn cannot be built of a size sufficient to accommodate 8 horses and 8 cows, 40 hogs, 2 or 3 colts, and as many calves, and still retaining an area (circular), in the center, of 30 or 35 feet in diameter, to hold the various kinds of food for the stock that occupy the surrounding stables. The next story to have a similar area in the center for threshing and cleaning grain with the surrounding space for granaries, stacking grain, &c., and also over-head, and if the building be 18 or 20 feet to the plates, would it not hold, in the straw, 1,200 or 1,500 bushels of wheat? and whether that quantity of grain can be packed away and then brought to a machine in the center as conveniently, or more so, in an eight-sided barn than in a four-sided one?

I understand both kinds are built at the North, and if some gentleman acquainted with both will favor the readers of your valuable periodical with the pros and cons, and the exact dimensions and arrangements of the most approved eight-sided barn, and also of the most approved four-sided one of equal capacity, together with the cost of each, he will confer a real favor on a community that is too apt to act without due deliberation even in the very important business of barn-building. I am most respectfully yours, &c. A FARMER.

☞ And the Publishers of THE FARMERS' LIBRARY AND MONTHLY JOURNAL OF AGRICULTURE will give their two volumes, elegantly bound, as a token of thanks for the best drawing and dissertation, to meet the views of the writer. [*Ed. Farm. Lib.*

THE GREEN TWIG PEACH.

J. S. SKINNER, Esq. CLARKSVILLE, Va., Jan. 22, 1847.

Dear Sir: Believing any communication I can make to you to be of so little importance in itself, and so little worthy to consume even a moment of your time, I have concluded to send you, by way of remuneration for the trouble I occasion, *the names of two subscribers.*

You recollect, while we were traveling in Alabama last spring, you gave me a vegetable pear (or Militon), at the same time receiving my promise to communicate to you my success in propagating it. It was given to one of my daughters, who, I fear, nursed it to death. It never vegetated at all. You also recollect I promised to send you a *green twig* peach-tree; which would have been sent last fall, by some of our merchants, if it had shed its foliage. I hope to send it in the spring. The small limbs of all peach trees are *red*, except the *green* twig. If you bud it on common peach, and let each kind grow equally on the same trunk, it is a very uncommon as well as beautiful tree.

The one reserved for you is suffered to retain limbs of the common kind, to show the striking contrast. If you choose, you can lop off the red limbs, and permit the green only to grow. The bloom is different from all other kinds of peach blooms, being *perfectly white as snow*, and resembling more the bloom of the cherry than the peach tree. The fruit is cling-stone and pale yellow, large size and very delicious.

I did not intend to write more than ten lines, and beg to be excused for it, after wishing your FARMERS' LIBRARY may circulate throughout the wide expanse of these United States.

Accept my best wishes for your health and happiness.

JNO. LEWIS.

[The peach tree has been given away, in advance, to a friend, who will cherish it, and gratuitously and freely distribute its progeny.

The vegetable spoken of was a very remarkable one, which we met with at the hospitable table of Col. Taylor, an old friend residing on the bank of the Mississippi at Point Coupée. We never saw its like before or since. It was cooked like parsnips, boiled and buttered, and makes a very acceptable addition to the list of vegetable esculents.]

NATIVE GRAPES OF TEXAS.

JOHN S. SKINNER, Esq. BASTROP, Texas, October 7, 1846.

Dear Sir: . . . I take pleasure in sending you some seed of a *very superior grape.* Like the Musqueat grass, it is indigenous and peculiar to the N. W. Prairies; and, if propagated from seed and cultivated, will improve it as much as it has done the original Irish potato. The wine-bibbers of the Old Thirteen will be as much indebted to Texas for it as Great Britain is for the potato, while it will add one more link to the never-ending chain of Nature's varieties.

O. T.

P. S.—Please send some of the seed to Rev. S. WELLER, of North Carolina. He will find them preferable to the Scuppernong, which is an original production of N. C.

LONG PRESERVATION OF APPLES.—At a Horticultural Exhibition of the Carlton Cottage Gardening Society, in England, in July, 1846, there was exhibited "a specimen of apples, gathered in 1844 by Mr. Liveridge, in an excellent state of preservation."

GRAPES.

Dear Sir: I find that Gen. Dearborn joins Dr. Underhill in asserting that foreign grapes cannot be grown by open culture in this country. It is very possible that the delicate grapes of the south of Europe cannot be reared by open culture in the neighborhood of Boston, or on the sea-shore north of New-Jersey; but I have raised at my farm, as you know, Miller's Burgundy, in great perfection, in open culture; also, Muscadine grapes, in bunches of over two pounds, and Black Hamburghs weighing from half a pound to over one pound bunches; and the flavor of the Hamburghs is better than those raised under glass.

I am determined to try and raise the Fontainbleau grape, as cultivated at Thomery for the Paris market; and, if I succeed, all lovers of fine fruit will thank me.

I wish you could persuade Mr. Wetmore, our Navy Agent, to get some grape-cuttings or grape-seeds from Oregon and California. I am told he is very obliging, and desirous to benefit our country. If he will procure any kind of seeds or plants, you know I will do all in my power to propagate them, and distribute them as he shall direct.

What do you know about the native flax that grows west of the Rocky Mountains? Could we get some seed, or some of Oregon wheat, that weighs 66 lbs. to the bushel?

Ever yours, C.

[We should be glad to be made the medium for promoting the enlightened and utilitarian views of our esteemed correspondent.]

SHEPHERDS' DOGS.—How Trained.—A gentleman wrote us, not long since, that he had succeeded in procuring a pair of Shepherds' Dogs, and that the slut had whelped eight fine pups.

The dog, on going into the field, would collect a flock of any size into a compact mass, but then he found difficulty in giving him to understand when he was to let them go at large, and asked for instruction.

We referred his letter to a gentleman of much experience in the observation and use of such dogs in the old countries; and, on his receiving a letter from him, our original correspondent writes what may be of use in the management of dogs generally, for all purposes.

We are inclined to believe in the superior efficacy of mild and humane over testy and bellicose treatment, in our management and intercourse with dogs, as well as with other animals, not excepting man—who we seriously believe to be more inclined than any other animals to make war wantonly on his *own species*.

J. S. Skinner, Esq. Bedford (near Augusta), Ga., Jan. 7, 1847.

Dear Sir: Your kind favor of the 16th December came to hand in regular course of mail, and I return you my grateful acknowledgments for your attention. Since its receipt, I have received one from Wm. Murdoch, Esq., of Asheville, giving me such directions as will aid me much in the management of my Shepherds' Dogs.

He advises kind treatment, with suitable punishment, administered with judgment, when the dogs are too rash with the sheep; and observes that the dogs possess great sagacity—will watch every look and gesture of the owner—and the government must be left to the judgment of the shepherd, as each shepherd has his peculiar management of his dog, as each sportsman has his peculiar mode of treating his pointer or setter. Young dogs should at first be coupled to well-trained old dogs.

It will give me great pleasure to add to the number of subscribers to your valuable work. . . If my agricultural ideas are worth anything to me (and I think they are), I am much indebted to you, and therefore owe you the exertion to increase your list of subscribers. Your "American Farmer" was the first agricultural paper that ever fell into my hands; and I only regret I did not read it with more care.

Most respectfully, J. L. C.

LETTER IV.

THE ADAPTATION OF THE SOILS, HERBAGE, &c. OF THE SOUTHERN STATES TO SHEEP HUSBANDRY, CONTINUED. 2. OF THE MIDDLE OR HILLY ZONE. 3. OF THE MOUNTAIN REGION.

Climate, Soils, and Productions of the Middle or Hilly Zone—Its evident Adaptation to Sheep Husbandry ...The Mountain Region...Altitudes of different Ranges and Peaks—Their general Shape—Freedom from Rocks, Precipices, &c...Table Lands—Their Geological Formations—Products...Mr. Clingman's Letter describing the Roan and other Mountains in North Carolina...Mr. Buckley's Counter Statements...Mr. Earle's Description of the Mountains in Henderson and Rutherford Counties, North Carolina...Col. Colston's Statements in relation to the Mountains in Berkley County, Virginia...Hon. A. Stevenson's in relation to the Blue Ridge, and the Mountains in the South-west of Virginia—Hon. W. L. Goggin's in relation to the same...Judge Beatty's Account of Sheep Husbandry on the Cumberland Mountains—Mr. Kramer's ...Mr. Buckley's Views in relation to the North Carolina Mountains examined and objected to...Climate of the Roan and others compared with that of the Grazing Lands of New-York...Statistics showing the Forwardness of the Seasons and the Temperature in New-York...Effect of Elevation on Temperature On Vegetable Productions.

Dear Sir: The middle or hilly zone is high, dry, healthy, and has a mild and, compared with the North, equable climate.* Its soils possess the ingredients due to its formation—disintegrated granite—and are far more fertile than those of the lower zone. Sometimes on the summits of the hills they are poor and thin, and there are occasionally extensive ranges of poor land, as in Virginia; but as a general thing, they vary from fair to good; and on the bottom lands of some of the rivers and larger creeks, they possess remarkable fertility. The valleys, however, are generally narrow, and are everywhere the bed of streams, which abundantly water this whole region, and furnish inexhaustible facilities for mills and manufactories. The slight cohesion of the soil, aided by the face of the country and the system of tillage pursued in many parts of it,† render it peculiarly subject to washing by heavy rains. The hill-sides are frequently cut into deep gullies, rendering aration difficult,‡ and the surface soil is washed into the valleys and into the beds of the creeks, not only impoverishing the high lands, but, by impeding the courses of the streams, in some regions converting those of the valleys into unhealthy marshes.‖

Grasses suited to the climate flourish *when sown*, and on lands not utterly worn out, throughout all this region; and there is little doubt that every variety which could be acclimated on the sands of the lower zone, could be more readily acclimated here—and probably various others. The pea succeeds in nearly every situation; oats also form a valuable manuring crop in some parts; while on many of the alluvial bottoms, such, for example, as the Blackjack lands of South Carolina—rye grows luxuriantly, answering a valuable purpose either for grain, manure, or for winter

* The range of the thermometer is sometimes 60° to 75° in a single month (March or April) in New-York!

† That is, a constant succession of clean tillage crops, such as cotton, corn, and tobacco.

‡ The Fishing Creek Agricultural Society, in their Report before quoted from, say: "The only really waste land we have is our old fields, many of which are so washed and gullied as to be absolutely irreclaimable." Mr. Ruffin says that "the destruction both of soil and of fertility has been enormous" from this cause.

‖ "The country was, at first, as its features indicated, nearly free from malaria and all its noxious effects. But as soon as the incessant and injudicious use of the plow caused the soil to be washed from the hilly grounds into the bottoms, the before unobstructed clean bordered channels of all the small streams were filled and clogged with earth, and vegetable rubbish, and finer matter, and the adjacent low lands were thereby rendered swampy. The washing of the high land earth into the valleys so altered the original surface level as to kill the trees; and their decay, and, later, the obstructions by their fallen trunks, increased the general evil. . . . . I infer" that these causes "have mainly served to nourish malaria and increase the malignity of disease." [Ruffin's Ag. Survey of S. C., 1843, p. 96.]

feed for stock. In this last particular, it would be, as I have before said an important auxiliary in sheep husbandry.

The adaptation of most of this region to sheep husbandry is too obvious to require extended comment; and it becomes, therefore, simply a question of profit and loss, whether it is expedient to introduce it.* Let us turn therefore, to the adaptation of the mountain region to this branch of industry

The altitude of the southern mountains, with a few exceptions, is not very considerable. The loftiest, the Black and the Roan, in North Carolina, are respectively 6,476 and 6,038 feet in hight. The Peaks of Otter, the highest, and summits of the Blue Ridge in Virginia, are 4,250, and the highest Alleganies 2,500 feet high. Table Mountain in South Carolina is about 4,000, and the terminal masses of the Blue Ridge in Georgia are about 1,500.† The hight of the Cumberland Mountains, the most western chain, I nowhere find stated, but they are not reputed as high as some of the preceding. It will be seen, therefore, that none of the southern mountains rise above the range of the grasses. They are usually broad at the base, easy of ascent, and rounded or flattened on their summits, instead of rising from narrow bases into steep pyramidal forms with conical peaks; and from their geological formations and their shape (resulting probably from that formation,) they are uncommonly free from exposed rocks, precipices and abrupt acclivities. With the exception, perhaps, of the Cumberland chain, large, exposed rocks abound far less, on most of these mountains than in many parts of New-England, or even the Old Red Sandstone region of Pennsylvania, which are not only pastured, but plowed! Indeed, a side-hill plow, drawn by oxen, could be used on very many of the southern mountains, if cleared, to their very summits; and this is true, singular as it may appear, of some of the loftiest of them.‡ The Cumberland Mountains are spoken of by Doct. Morse, as "stupendous piles of craggy rocks," and in these statements he has been followed by more recent geographers. But if this description applies to some portions of the chain, it certainly does not to others, as I shall have occasion to show.

On the sides, and sometimes on the summits of the mountains in different parts of this whole region, extensive plains or table lands, already pretty well covered with wild and domestic grasses and nutritious esculents, not unfrequently occur. Esculents suitable for sheep are to be found in greater or less quantities on nearly all of them.

West of the summit of the Blue Ridge, the geological formations, as has before been stated, belong to the Transition period—a rather unusual circumstance in mountain ranges, and undoubtedly more indicative of fertility in the superincumbent soils than the ordinary Primary formation.‖ Indeed, they are the same with those of the best grazing lands of Southern New-York, and subtracting climatic and other§ effects of elevation, they should possess a general correspondence in their properties and products, with the latter.¶

* This question will be fully discussed in a subsequent letter.

† For these altitudes, I am indebted to Professor Mitchell.

‡ For example, the Roan.

‖ It is true that soils formed from Primary rocks, when sufficiently fertile to sustain herbage of any kind, are peculiarly adapted to the production of sweet grasses; but mountains of this formation are usually steeper, from the slower decomposition of granite, gneiss, and other Primary rocks, and their steepness exposes them to increased abrasion, or washing. Hence their soils frequently but thinly cover the rocks, and are of a meager and lixiviated character.

§ To wit, abrasion and denudation by rains. And, moreover, the "northern drift" of New-York has added a little *lime* to the soils formed from these rocks, and thus supplied, measurably, a want existing in all of them for most tillage crops.

¶ For example, the "Slate Hills," which rise on the west of Augusta, Rockingham, Shenandoah, Frederick and some other counties in Virginia, are composed of the same rocks (Hamilton group, including Genesee slate of the New-York system,) which underlie some of the best soils in New-York; and much of the land between these hills and the Alleganies rests on the same rocks, (Chemung,) which underlie the southern grazing region of New-York.

In ascertaining the particular products of these mountains, their climate, and general adaptation to sheep husbandry, I will first call your attention to the often quoted letter from Hon. T. L. Clingman, of North Carolina, to John S. Skinner, Esq., in 1844. Mr. Clingman says:

"You state that you have directed some attention to the Sheep Husbandry of the United States, in the course of which it has occurred to you that the people of the mountain regions of North Carolina, and some of the other Southern States, have not availed themselves sufficiently of their natural advantages for the production of sheep. Being myself well acquainted with the western section of North Carolina, I may perhaps be able to give you most of the information you desire. As you have directed several of your inquiries to the county of Yancey, (I presume from the fact, well known to you, that it contains the highest mountains in any of the United States,) I will, in the first place, turn my attention to that county. First, as to its elevation. Dr. Mitchell, of our University, ascertained that the bed of Tow River, the largest stream in the county, and at a ford near its center, was about 2,200 feet above the level of the ocean. Burnsville, the seat of the court-house, he found to be between 2,800 and 2,900 feet above it. The general level of the country is, of course, much above this elevation. In fact, a number of the mountain summits rise above the hight of 6,000 feet. The climate is delightfully cool during the summer; in fact there are very few places in the county where the thermometer rises above 80° on the hottest day. An intelligent gentleman who passed the summer in the northern part of the county (rather the more elevated portion of it) informed me that the thermometer did not rise on the hottest days above 76°.

'You ask, in the next place, if the surface of the ground is so much covered with rocks as to render it unfit for pasture? The reverse is the fact; no portion of the county that I have passed over is too rocky for cultivation; and in many sections of the county one may travel miles without seeing a single stone. It is only about the tops of the higher mountains that rocky precipices are to be found. A large portion of the surface of the county is a sort of elevated table-land, *undulating*, but seldom too broken for cultivation. Even as one ascends the higher mountains, he will find occasionally on their sides flats of level land containing several hundred acres in a body. The top of the Roan (the highest mountain in the county except the Black) is covered by a prairie for ten miles, which affords a rich pasture during the greater part of the year. The ascent to it is so gradual that persons ride to the top on horseback from almost any direction. The same may be said of many of the other mountains. The soil of the county generally is uncommonly fertile, producing with tolerable cultivation abundant crops. What seems extraordinary to a stranger is the fact that the soil becomes richer as he ascends the mountains. The sides of the Roan, the Black, the Bald, and others, at an elevation even of five or six thousand feet above the sea, are covered with a deep, rich vegetable mould, so soft that a horse in dry weather often sinks to the fetlock. The fact that the soil is frequently more fertile as one ascends is, I presume, attributable to the circumstance that the higher portions are more commonly covered with clouds; and the vegetable matter being thus kept in a cool, moist state while decaying, is incorporated to a greater degree with the surface of the earth, just as it is usually found that the north side of the hill is richer than the portion most exposed to the action of the sun's rays. The sides of the mountains, the timber being generally large, with little undergrowth and brushwood, are peculiarly fitted for pasture grounds, and the vegetation is in many places as luxuriant as it is in the rich savannah of the low country.

"The soil of every part of the county is not only favorable to the production of grain, but is peculiarly fitted for grasses. Timothy is supposed to make the largest yield, two tons of hay being easily produced on an acre, but herds-grass, or red-top, and clover succeed equally well; blue-grass has not been much tried, but is said to do remarkably well. A friend showed me several spears which he informed me were produced in the northern part of the county, and which by measurement were found to exceed 70 inches in length. Oats, rye, potatoes, turnips, &c., are produced in the greatest abundance.

"With respect to the prices of land, I can assure you that large bodies of uncleared, rich land, most of which might be cultivated, have been sold at prices varying from 25 cents to 50 cents per acre. Any quantity of land favorable for sheep-walks might be procured in any section of the county at prices varying from one to ten dollars per acre.

"The few sheep that exist in the county thrive remarkably well, and are sometimes permitted to run at large during the winter without being fed and without suffering. As the number kept by any individual is not large enough to justify the employment of a shepherd to take care of them, they are not unfrequently destroyed by vicious dogs, and more rarely by wolves, which have not yet been entirely exterminated.

"I have been somewhat prolix in my observations on this county, because some of your inquiries were directed particularly to it, and because most of what I have said of Yancey is true of the other counties west of the Blue Ridge. Haywood has about the same elevation and climate as Yancey. The mountains are rather more steep, and the valleys somewhat

broader; the soil generally not quite so deep, but very productive, especially in grasses. In some sections of the county, however, the soil is equal to the best I have seen.

"Buncombe and Henderson are rather less elevated; Ashville and Hendersonville, the county towns, being each about 2,200 feet above the sea. The climate is much the same, but a very little warmer. The more broken portions of these counties resemble much the mountainous parts of Yancey and Haywood, but they contain much more level land. Indeed the greater portion of Henderson is quite level. It contains much swamp land, which, when cleared, with very little if any drainage, produces very fine crops of herds-grass. Portions of Macon and Cherokee counties are quite as favorable, both as to climate and soil, as those above described. I would advert particularly to the valley of the Nantahalah, in Macon, and of Cheoh, in Cherokee. In either, for a comparatively trifling price, some ten or fifteen miles square could be procured, all of which would be rich, and the major part sufficiently level for cultivation, and especially fitted, as their natural meadows indicate, for the production of grass.

"In conclusion, I may say, that as far as my limited knowledge of such matters authorizes me to speak, I am satisfied that there is no region that is more favorable to the production of sheep than much of the country I have described. It is everywhere healthy and well watered. I may add, too, that there is water-power enough in the different counties composing my Congressional District to move more machinery than human labor can ever place there—enough, perhaps, to move all now existing in the Union."

A writer in the Albany Cultivator, Mr. S. B. Buckley, of Yates county, New-York, who has visited these mountains, thus objects to the views of Mr. Clingman:

"These mountains have a cold, damp climate, the summits of the highest being covered with clouds and mists a large portion of the summer season. Cold rains are of frequent occurrence, doubtless causing the deep vegetable mould alluded to by Mr. C. A large portion of the county of Yancey is an elevated table-land which is so damp and cold that the inhabitants do not raise corn sufficient for their own consumption. . . . . Mr. Husted informed me that in many seasons there was scarcely a month in the year without frost . . . . that he had been on the top of the Roan on the 25th of June, when a snow storm arose and completely covered the mountain, and that there were few days in the year but that it was foggy on the Roan. . . . . I have ascended most of the high mountains in that State, and rarely without encountering a storm, or finding their tops covered with mists, which disappeared in the cool of the evening, to be resumed by the warming rays of the morrow's sun. In encamping on the mountains, I generally found the thermometer to range from 45° to 60°, and on the high mountains, during the day, it seldom rose above 65°. The inhabitants of the valleys pay great attention to the raising of cattle and horses, which, in the summer season, are turned upon the mountains in what is termed 'the range,' which consists of tall weeds, native grasses, and in many places white clover has become naturalized. * * * *

"These remarks will apply more or less to the mountainous region of Haywood and Macon counties, from which we conclude that they are not suitable to the raising of fine-wooled sheep, judging from their elevation, damp and cold climate, which, as before remarked by Mr. C., creates a deep vegetable mould, in which a horse will sink up to the fetlock. And would not sheep sink in also, and be liable to have the foot-rot? And in yeaning time would not many lambs be lost from the frequent cold rains so common there during the month of May?"*

In a previous communication in the Cultivator the same writer says:†

"On the 12th of May I arrived at Ashville, (the capital of Buncombe county,) intending to visit Mt. Pisgah, a high conical mountain in full view, about twelve miles distant, overtopping its neighbors. I was told that the season was not far enough advanced to bring vegetation forward on the high mountains. . . . The climate of this region is not much, if any, warmer than that of Western New-York. During the summer of 1842, the thermometer ranged generally from 70° to 85° in the valleys, while on the mountains it was frequently about 60°, and sometimes much lower. . . . . When I left the southern portion of Alabama, it was the middle of March; the woods were green, with their full expanded leaves; in about a week I had reached the elevated region south of Huntsville, in the northern part of the State, where the leaves had not yet attained half their usual size. From the 1st to the 10th of April, in Middle Tennessee, the leaves were nearly full grown and the inhabitants were busy in planting corn; but at the middle of April, for thirty miles on the table land of the Cumberland Mountains, the trees had just begun to put forth their leaves, and the ground was white in the morning with a severe frost.

"On descending into the plains of East Tennessee, the country was green with verdure, and the farmers were there also busy in planting corn, and now, the middle of May, among

* See Albany Cultivator, 1846, p. 242. † Ib., 1846, p. 174.

the mountains of North Carolina, I found myself where vegetation had scarcely clothed the plains and woods with green, while the leaves of the high mountain trees were about half grown. I should also remark that the spring of 1842 was from two weeks to a month earlier than usual."

I record a portion of the last extract for subsequent reference; and the object of these communications being to arrive at the *truth*, and not to ride a favorite hobby, or advance a preconceived theory, I have thought it proper to give the substance of all this gentleman's remarks, embodying as they do *all* the objections, real or supposed, which exist against the *highest mountains in the whole Southern States* for the purposes of sheep husbandry.

Per contra, we have the following statements of Henry M. Earle, Esq., of Pacolett, Rutherford Co., North Carolina: *

"On the question whether wool-growing will succeed in North Carolina or not, I would say that it depends entirely upon the exertions used, as I am thoroughly convinced that the country and climate are altogether favorable. The objections raised by Mr. Buckley, if they existed in all the mountain region, might be considered serious; but as they can only be offered against a few very high mountains, situated in the midst of many other mountains, and far from any level or plain country, such a hiding place as he speaks of would not be such a place as persons raised in civilized or refined society would wish to settle in. The Roan and Black Mountains were selected by Mr. Thos. Clingman, because they were the most elevated and noted mountains in Yancey Co., and not, I presume, because he thought they would afford the best pasturage for sheep; if so he was mistaken. On those mountains and in their vicinity are the finest grazing lands for cattle; and so there is in the low, marshy land of South Carolina; but neither location is favorable for sheep. I agree with Mr. Buckley, 'that a large portion of the county of Yancey is an elevated table land, which is so damp and cold that the inhabitants frequently do not raise corn sufficient for their own consumption.' This is partly owing to the climate; but mostly to the character of many of the inhabitants of those sparsely inhabited regions, where they too frequently depend upon the success of the chase for the largest portion of their subsistence.

"But if Mr. Buckley, or any other gentleman of observation, will come 60 miles farther south—on the line of the Blue Ridge, into Henderson and Rutherford counties, about the Tryon Mountain, which is the first that he will ascend in rising up from the level country east of the Blue Ridge, along the Howard-Gap Turnpike—high on the acclivity of the Tryon he will find a bench of land which possesses a very peculiar characteristic. At night, generally, there is a pleasant breeze, and for several miles along the mountain side there is never any dew to be found, and it is very rare that they have frost except in winter; and when the whole country above and below is covered with sleet, along this mountain side there is none. Here grow the finest native grapes that I ever saw, and the fruit crop never fails. And here are grown the heaviest wheat and rye in all the country. Here the inhabitants have the first dawn of the morning sun, and persons unaccustomed to the view fancy that they can almost see him coming up from the watery deep. On the eastern side of this mountain is the earliest pasturage in spring, and the latest in the fall that is found in the whole range of mountains.

"This location is about 46 miles E. S. E. from Ashville, and 20 miles S. S. W. from Rutherfordton. Here two of those ever persevering men from the North, called Yankees, have commenced to wall in a vineyard, and to cultivate the broom-corn for manufacturing brooms. They have the purest water that flows out of the earth, and around them are beautiful cascades more than a hundred feet high, and above them the toppling peak of the Tryon.

"Thousands of persons throng this mountain region during the summer, to enjoy the pure, bracing atmosphere, which on the eastern face of the mountain is dry and healthful; but farther back, in the mountains of the French Broad, there is much more dampness and heavy fogs.

"You may readily conclude that along the eastern slopes of these mountains, the climate and country are finely adapted to the growth of wool, as may also be seen by many of the fine flocks of native unimproved sheep, which wander here untended, regardless of wolves or dogs, their greatest enemies.

"For two hundred miles along the eastern slopes of these mountains, south, there are situations well suited for large flocks of sheep, and land is cheap. In many places it does not cost more than 20 cents per acre, and very fair land may be had for 40 cents per acre."

In an Address,† remarkable for the force and pertinency of its sugges-

* See Albany Cultivator, 1846, pp. 335–336.

† Delivered in Martinsburg, Va., Oct. 30th, 1845, before the Berkley County Agricultural Society, published in the Valley Farmer, Dec. 1845, and Jan. 1846.

tions, Col. Edward Colston, of Berkley county, Virginia, makes the following statements:

"The western part of our county, containing perhaps 30,000 acres, is mountainous. I have ridden there for ten miles without seeing a human habitation, and although from its abundant herbage it might sustain for its owners 20,000 head of sheep, not a single one is to be found grazing on its surface. In this region may be found, also, much land fit for cultivation, with fine meadows and abundant water. Yet all this is worthless to our community, and a dead capital to the proprietors. There is territory and grass enough here to be divided into three or four sheep-walks, each sustaining from 3,000 to 4,000 sheep during the summer, with meadow and arable land enough, at a small expense, to provide amply for winter sustenance."

Hon. Andrew Stevenson, of Virginia, in a letter to Mr. Skinner,* says:

'Virginia has many advantages for breeding sheep, not surpassed in the United States The middle part of the State, and especially the whole range of the south-west Mountains and Blue Ridge, afford the greatest facilities for fine sheep-walks. Hills covered with fine herbage, extensive inclosures, abundance of running water, and well sheltered by trees against the heat and sun of summer."

The following extracts are from a communication in the Monthly Journal of Agriculture,† by Hon. W. L. Goggin, who recently represented the District he describes in Congress:

"Bedford, the county in which I reside, is bounded on the south side by the Staunton River, on the north by the James River, while its western extremity, the whole length, reaches the top of the Blue Ridge. . . . . The Peaks of Otter‡ are situated in this county, on the north-west corner—they are not only beautiful themselves, when seen as they are in the distance, but the whole range of the Blue Ridge presents, perhaps, here, the most interesting view of the kind in the State. These mountains afford an unlimited range for stock, and the advantages for sheep-walks (mild as *is* the climate, combined with the productiveness of the soil) that are nowhere equaled, as is believed, except by similar situations in the neighboring counties. . . . . Ranges for sheep may be had at a very reduced price on the mountains, and where, too, could be produced all the grasses in which they delight, such as the red and white clover, the meadow fox-tail, short blue meadow-grass, lucern, rye-grass, &c. These advantages, and then the beautiful, clear streams which abound in all the mountain regions, invite a pastoral life." Speaking of Amherst and Nelson counties, he says: 'The ranges for stock here, too, are extensive, and the beautiful, rich mountain sides interspersed with farm-houses, some of them even elegant mansions, betoken an independence among the inhabitants that is often found in such situations. Many of the mountains, to their very summits, are covered with the richest verdure." Of Madison and Greene counties he says: "Here, too, are abundant ranges, and the wonder is that sheep husbandry is not introduced."

The character of the loftier mountains of Virginia and North Carolina, for the production of grasses, would seem to leave no doubt, in this particular, in regard to the *lower* ones which form the prolongation of the same chains in South Carolina, Georgia, and Alabama. Let us now turn our glance to the great western chain—the Cumberland Mountains—in Kentucky and Tennessee.

The following extracts are from a communication published by Hon. A. Beatty in the American Agriculturist:

"But it is not upon our high-priced rich lands alone that we can carry on sheep husbandry to advantage. Kentucky has a belt of hill and mountain country, bordering on the Virginia line on the east, and on the rich lands of the State on the west, averaging about seventy-five miles in width, extending from the Ohio River and Big Sandy, latitude 38° 30′, to the Tennessee line, 36° 30′ north. The whole of this region is admirably adapted to sheep husbandry; the most northern part but a few minutes north of my residence, and extending about two degrees farther south. The lands are very cheap: the State price of those not yet appropriated only five cents per acre, and those purchased second-hand, more or less improved, may be had from 25 to 50 cents per acre, and still less when unimproved. This country in a state of nature furnishes, during the spring, summer, and fall months, a fine range for sheep, and is susceptible of great improvement by clearing up and sowing the cultivated grasses for winter feeding. This whole country is finely adapted to the Spanish

* Monthly Journal of Agriculture, July, 1845, pp. 37–39. † Ib., October, 1845, pp. 181–183.
‡ The loftiest mountains, as before stated, of Virginia.

mode of sheep husbandry. Very large flocks might be driven to the mountain region, some thirty to sixty miles from the rich lands, immediately after shearing time, grazed till late in the fall, and then brought back to be sustained during the winter on the luxuriant blue grass pastures of the rich lands of the interior.

"A very intelligent friend, residing in the southern part of the above district of country, speaks of it in the following terms: 'One of the strongest proofs of this region of country being favorable to the growing of sheep stock is that we are situated in the same degree of north latitude with the sheep-raising parts of Spain—Leon, Estremadura, Old Castile, &c.—only that our mountains are more richly and abundantly clad with luxuriant wild grasses and fern, pea vine, and shrubbery, than the mountain regions of Spain, where they raise such abundant stocks of sheep. Wayne County, with a few adjoining counties, affords more fine water-power than any country of the same extent that I have ever known; and for health, and fine, pure drinking water, no country excels it on the face of the globe. Now is the time to commence the business of sheep husbandry, while land can be got almost for nothing. It is worthy of remark that our sheep, which are suffered to roam and graze in the mountains altogether, produce about *one-fourth more wool at a shearing than the sheep that are raised and grazed altogether on our farms, and of much better quality.*' In another part of his letter he says: 'The tops of the mountains of Spain are sterile, without verdure, producing no food for sheep, or other animals, to graze on. Our mountains are quite different. They are thickly clad from bottom to top, and all over the top, with fine rich wild grasses and shrubbery of every variety, for stock to graze on. In the midst of our mountains are to be found a great abundance of salt water and stone coal of the finest quality, together with a great variety of mineral waters and pure springs.'

"Another friend, residing in Knox County, writes to me: 'My sheep upon my farm, adjoining Barboursville, do not thrive, even with pasture and winter food, like the sheep in the extremities of the county, which have neither pastures nor winter food, except what they get in the woods. Without cultivated grasses of any description, sheep will live and do well all the winter, subsisting on the spontaneous growth of the country.'

"Another friend, residing in the northern portion of the above-described mountain region, writes that 'the counties of Carter and Lawrence, and the eastern portion of the State, are admirably adapted to sheep husbandry. There are several flocks of sheep in this neighborhood that thrive and increase wonderfully, *running at large*, at little cost or trouble to their owners. Many flocks have no other reliance, during the winter, but what they get in the woods. The great advantages of this country for sheep husbandry are, the cheapness of the land, it adaptation to grasses, grain, and roots—its healthfulness. Sheep delight in mountain or hilly land; the natural evergreens and shrubbery upon which sheep can feed and subsist on in winter; though it is not safe to rely altogether upon these.'"

Mr. C. F. Kramer of Woolverly Farm, Marion Co. Tennessee, in a communication in the Nashville Agriculturist,* says:

"After having spent part of the years '43 and '44 on different parts of the Cumberland Mountains—the part of Tennessee more particularly recommended by all writers in your journal, and others, for sheep-walks—I have, since last fall, settled on a portion of them near Jasper, Marion Co. and will, as briefly as possible, give you the result of my experience, which will, I believe, fully remove any erroneous impressions hitherto made.

"First, as to climate: The extreme salubrity of the mountains makes them the general refuge of the sick. Sheep here are remarkably healthy, and exempt from disease. The temperature is very even, varying during summer seldom more than from 75° to 80° of Fahrenheit, nor in winter more than from 45° to 30°. Snow during the two winters, little as there was of it, never remained forty-eight hours on the ground.

"The forest, so far from being dense, seldom contains more timber, after cutting out the smaller growth, as dogwood, &c. than is desirable for woodland pasture.

"The rocks, as far as my rambles have extended, are 'few and far between.' The better spots of soil (and there are enough to provide every farm with sufficient remunerating arable land, under a provident and enlightened system of tillage) are covered with nutritious weeds, as pea-vine, &c. &c. which are nearly all greedily devoured by sheep and cattle, and on which they fare well. The poorer soil is covered with sedge-grass, which my sheep have invariably eaten with avidity.

"When our herds and blue grass lands, which we are laying down, will be fit for pasturing, the cost of wintering will be greatly reduced, as the former yields good grazing in February—the latter during the whole winter. Our young cattle kept in good condition on the winter-range and two ears of corn per head per day.

"Although the wolves of our mountains are larger than those of the prairies, and may be more difficult to exterminate entirely, yet, thanks to our good hunters, their ranks have been already so thinned that they mostly prowl about alone, or at most in pairs, committing their depredations by night, on the sheep and hogs that are left to shift for themselves. In the

* June, 1846.

two years that I have been here, I know of but two instances of their having attacked young stray cattle by night. By day, sheep are perfectly safe; and I should presume that every good sheep-master would have his flocks, for inspection, home at night, when any common fence will be an ample safeguard for them."

To recur, for a moment, to Mr. Buckley's statements in relation to the Roan and some of the contiguous mountains in North Carolina—if we concede all his positions to be correct—it but proves that they are exceptions to a general rule. But a review of his facts, it seems to me, scarcely justifies his conclusions.

The vegetation which seemed so backward to him, coming from the warmer climate of Alabama and Lower Tennessee, was in fact but little, if any, later than that of the elevated grazing lands of Southern New-York. The following table* will show the average forwardness of the seasons at the location of fifty-eight Academies, scattered over New-York, for a term of fifteen years. And these Academies, as would be supposed, are rarely found on the high bleak hills. In fact, the number in the southern grazing region is but small, and they are mostly on the low bottoms of the larger streams. The same remark will also apply to the high region between the St. Lawrence and Lake Champlain.

TABLE NO. 5.

	Mean Date.	*No. of Localities.*	*No. of Observations*
Shadbush in bloom	May 1	48	168
Peach do.	" 2*	57	175
Currants do.	" 4	58	269
Plum do.	" 6	52	264
Cherry do.	" 7	52	250
Apple do.	" 15	59	374
Strawberries ripe	June 12	58	210
Hay harvest commenced	July 18	34	127
Wheat do. do.	" 25	45	186
First killing Frost	Sept. 23	57	471
First fall of Snow	Nov. 5	--	536

* As the Peach does not grow in the northern part of the State, this date must be considered the mean for the southern and middle parts only, and hence is too early as compared with other trees.

The blossoming of the apple tree in the grazing regions of New-York takes place when the leaves of the forest trees are considerably less than half grown, as Mr. B. found them on the "high mountain trees" of North Carolina on the 12th of May.

Snow storms sometimes occur in New-York as late as the one recorded by Mr. B. on the Roan; cold, damp fogs are not found destructive to sheep in some parts of England and Scotland, where they prevail probably quite as much as on these mountains; and there are *many* parts of the grazing region of New-York, and *good grazing* lands, too, where the inhabitants "do not raise corn sufficient for their own consumption." As Mr. B. gives neither the dates nor the altitudes of his own thermometrical observations, no conclusions can be deduced from them. Speaking of the region about Asheville, the more definite statement is made by him, that during the summer of 1842, the thermometer ranged generally from 70 to 85 degrees, (which he pronounces not much, if any, warmer than Western New-York,) "while on the mountains it was frequently about 60 degrees, and sometimes much lower." If by *frequent*, he meant *ordinary* temperature, the summer climate of these lofty mountains much resembles that of New-York in June—usually considered the month of the pleasantest

* This table was prepared by James H. Coffin, a tutor in Williams College, from the Report of these facts annually required to be made by the Academies to the Regents of the University. This and some other tables and statements of Mr. C.'s, which I shall have occasion to quote, appear in a very able paper from him on the Climate and Temperature of New-York, in the forthcoming volume on Agriculture, in the Natural History of the State: some sheets of which have been politely sent me by Doct. Emmons, the State Geologist, who has that volume in charge.

temperature of the year—equally removed from the chilliness of spring, and the sultry heats of the last two summer months. But as the altitudes of the latter observations are not given, they present us nothing definite or tangible. A smart walk of a few moments up or down a mountain side, would carry one through a variation of temperature amounting to a degree. By the rule of Professor Leslie,* commonly adopted, 300 feet of elevation diminishes the temperature 1°; but the experiments of Humboldt, Gay-Lussac, and various other observers, have shown that this cannot be relied upon. One degree is usually equivalent to a greater ascent. Mr. Coffin (in the paper before alluded to) deduces the conclusion that in the State of New-York, the ascent necessary to decrease the temperature 1° is 350 feet. Taking the mean of the range of temperature of Asheville, as stated by Mr. B. it gives 77½° as the average summer temperature of that place, which, as will appear in the table below, is about 10° higher and warmer than that of New-York for the same season and year, (excepting on the beds of two rivers—the Hudson and Mohawk.) Applying the New-York rule to the region of Asheville, it would require, then, an elevation of something like 3,500 feet on the mountain sides above that place, to equalize the temperature with that of the greater portion of New-York.

To show the entire accuracy of the subjoined table of temperatures, I would remark that it is founded on the Annual Reports of the Academies to the Regents of the University. The observations are therefore made by correct instruments,† on fixed conditions, and by scientific men. I have selected the points indicated in reference solely to a fair latitudinal and geographical distribution over the State;‡ and to enable you to find them on the map, the name of the *place*, instead of the Academy, is given:

TABLE NO. 6.

	Latitude.	Elevation.	Temperature 1842. June.	July.	Aug.	Remarks.
Flatbush..	40°73′	40	64 28	72 16	69 97	Near the extreme southern point of Long Island...
Po'keepsie	41 41	....	61 29	76 83	71 56	On the Hudson. Elevation not given.....
Albany....	42 39	130	65 85	72 66	70 23	
Potsdam ..	44 40	394	59 62	67 36	67 12	In St. Lawrence County; north part of State.....
Lowville..	43 47	800	60 51	67 52	64 46	On the Black River.....
Utica.....	43 06	173	63 58	70 15	69 15	
Syracuse..	42 59	....	59 75	65 77	64 86	Both in same county, but given on account of difference in elevation.....
Pompey ..	42 56	1300	57 70	64 20	63 50	
Homer....	42 38	1096	58 88	64 14	65 67	In the southern or grazing region.....
Ithaca.....	42 27	417	63 80	69 65	67 74	Do. do. .....
Prattsburg.	.. ..	1494	56 83	65 24	68 71	Do. do. .....
Rochester.	43 08	506	60 66	66 94	67 35	In the heart of the Wheat growing region.....
Wyoming.	42 49	800	59 97	71 50	56 99	Do. do. .....
Fredonia .	42 26	345	63 42	69 60	68 71	In the grazing region; on the shore of Lake Erie..
Lewiston..	43 09	280	62 05	68 91	68 50	On Niagara River.....

The five last named places are in "Western New-York."

But there is one fact stated by Mr. Buckley, in relation to the lofty mountains of North Carolina, which, irrespective of all thermometrical observations, demonstrates conclusively, to my mind, their adaptation to sheep husbandry. This fact is, that *white clover* grows (of course, spontaneously,) on them. Or perhaps I should rather say, that the mountains themselves become thermometers, their vegetation registering, by a well settled natural law, their temperate climate. Says Malte Brun:

"Under the burning climate of the torrid zone, we have only to ascend the mountains, to enjoy the fruits and flowers of the temperate regions. Tournefort found at the base of Mount

* Prof. L.'s rule, however, was only made applicable by him to *tropical* regions.

† Half, probably, of the thermometers in common use are inaccurate!

‡ For the records of temperatures given, see Report of the Regents, 1843, p. 240. For latitudes and elevations of the Academies, see Report of 1838, pp. 212 to 215, and map.

Ararat the common vegetables of Armenia; half way up, those of Italy and France; and upon the summit, those of Scandinavia. Forster saw several Alpine plants upon the mountains of Terra del Fuego."

Mr. Mudie also remarks:

"If we take each mountain as the index of its own meridian, we shall find that each one expresses, by its vegetation, all the varieties of climate between it and the pole."*

Humboldt, and our own Doct. Forry, notice an equally striking development of this law, on the Western Continent.†

This would go to show what I have little doubt is the fact, (my impressions, too, being strengthened by a comparison of latitude, elevation, and recorded thermometrical observations,) that on the sides of the Roan and other lofty mountains of North Carolina, and pretty well *up* on their sides, too, the climate is not greatly dissimilar from that on the high grazing lands of New-York and New-England. On the sweetest and best of the latter, white clover always comes up spontaneously, and will immediately re-sward any field thrown out of tillage. It sometimes flourishes on soils of ordinary fertility, but never on very sour or boggy ones, or on those the poachy character of which would render them liable to communicate hoof-rot or other diseases. It indicates, most decidedly, both a soil and climate fitted for sheep.

You will not understand, Sir, of course, that in the remarks made and facts stated, at so great length, in relation to three or four mountains, my object has been simply to refute the views of Mr. Buckley in relation to them. In a region of 70,000 square miles, the unadaptation of half a dozen mountains, or a much greater number, to this or any other branch of husbandry, would be of but little comparative importance. Anticipating, however, the croakings of the timid—the exaggerated counter statements of those rash and sanguine men who are ever ready to rush into whatever is *new*, without judgment to guide or perseverance to sustain them: who abandon their undertakings at the first obstacle, and apologize for their ficklety by magnifying the difficulties encountered by them: I deemed it expedient to lay before you some useful data for comparisons, (and conclusions,) which will be equally applicable in the case of all our southern mountains.

The hilly and level regions *west* of the mountains, and lying between them and the Mississippi and Ohio rivers, scarcely require a separate notice—particularly after the statements of Mr. Cockrill, given in my second letter. As a whole, they are undoubtedly more fertile, and better adapted to the production of the grasses, than those of corresponding latitude, in even the hilly zone, east of the mountains.

ARTIFICIAL INCUBATION.—"The mean temperature of incubation is 100° Fahr.: it may vary from 95° to 105°, and toward the close of the process may be suspended for one or two hours, or for a longer period, according to the degree of extraneous heat which the eggs may derive from their situation, without fatal consequences to the embryo." [See Johnson's "Farmers' Encyclopædia."]

---

* Mudie's World.

† Since making the extract above from Malte Brun, I observe the following better, or, at least, more definite expression of the same fact by Doct. Forry: "In ascending a lofty mountain of the torrid zone, the greatest variety in vegetation is displayed. At its foot and under the burning sun, ananas and plantains flourish; the regions of limes and oranges succeeds; then follow fields of maize and luxuriant wheat; and still higher, the series of plants known in the temperate zone. The mountains of temperate regions exhibit, perhaps, less variety, but the change is equally striking." See Forry's *Climate of the United States.*

THE TRUE COTTON REGION.

Mr. Editor: To answer fully the last communication of X. Y. Z. would require a very thorough discussion both of the history and principles of the Protective System, which would be manifestly out of place in your journal. I will therefore, with a few general remarks, abandon the controversy into which I have been unexpectedly drawn. Immediately after the passage of the Compromise Act in 1833, which provided for a reduction of duties, the price of cotton rose. The same thing has happened on the repeal of the Tariff of 1842. I do not mean to attribute the advance in cotton *solely* to these acts of Congress; but I do not doubt they have had some agency in it. The coincidences would be very remarkable, if merely accidental. With the price of cotton, the price of everything in this country advances. Should manufactures, therefore, fail to fall at once, it must not be argued that low duties do not produce low prices. Free-Trade is as yet an experiment, founded, indeed, upon the soundest reasoning, and thus far, to the extent it has been fairly tried, fully answering the expectations of its advocates. Let the act of 1846 be allowed to operate for only half the period we have submitted to the Protective System, and if it does not demonstrate that adding 50 per cent. to the cost of an article enhances its price, and taking off that much lowers it, then its friends will abandon it, surrender their doctrines, agree that 2 added to 4 makes 3, and substracted from it makes 5, and admit that the benevolent and sagacious manufacturer seeks a monopoly to enrich himself not by selling his goods *higher*, but actually by selling them *lower*, thus practically solving the ancient paradox of "*lucus a non lucendo*."

That the prices of nearly all manufactured articles have materially fallen since our Tariff of 1816, is unquestionable. So has cotton fallen. Not only in America, but all over the world, have manufactures of all kinds and the raw materials of them come down. Have our Tariffs produced such wide-spread effects? Has *our legislation* revolutionized the world in these last 30 years? Is this what X. Y. Z. and the advocates of the "American System" would have us understand, when they tell us that we get "shirtings, plains, kerseys, plows, hoes, axes, &c. at half what we formerly paid for them?" Then they expect us to forget that for these 30 years the world has enjoyed almost unbroken peace; that for all that period the energies, mental and physical, of a very large portion (and that the most enlightened and most enterprising) of the human family, have been exclusively and ardently devoted to the advancement of all the arts and sciences which promote the prosperity and happiness of man. Monopolies and Tariffs have existed in all nations and all ages from the time of Joseph to the present day, yet what have they done for mankind in the way of *cheap producture*, compared with what steam alone has accomplished since 1816? Inveterate habits of thought, large vested interest, and, above all, unwise national jealousies, have greatly retarded the progress of Free-Trade during this unparalleled era of development; but its day has at length fairly dawned, and thirty years more of peace, *under its auspices*, will unite the human race in bonds of brotherhood that shall encircle the globe, and make War a mere thing of history—banished from use, like the stylus and papyrus of antiquity and the mail armor of the middle ages.

As to the Cotton region and the actual production of the rich lands of the South-west, if the first and last paragraphs of X. Y. Z.'s last article are taken together and the average made of his own statistics, it will be seen I have not been so far wrong. Good seasons and "well managed plantations" are not to be taken as standards of the production of Agricultural countries. I gave before some examples of what *had been done* here under favorable circumstances. To go into a calculation of what *might be done* here, would occupy more time than I can spare just now and more space than you would be willing to allow me.—But my opinion grows stronger every day, that if "let alone" and allowed to enjoy the fruits of their own intelligence and industry, the planters of this region need not go elsewhere to improve their fortunes.

Allow me to say, that notwithstanding his side thrusts at "Carolina doctrines" and "chivalry," I part from X. Y. Z. in perfect good humor; and that I thank you, Mr. Editor, for your courtesy in publishing my articles. S. B.

MANUFACTURE OF SUGAR.

DEROSNE AND CAIL'S SYSTEM EXPLAINED.

J. S. SKINNER, Esq. PARISH OF ASCENSION, La.

Dear Sir: With the view of making a small contribution to the mass of varied and most useful information contained in your valuable periodical, and in fulfillment of a promise made you, I forward the inclosed. It is a translation of a publication of Messrs. Derosne and Cail, of Paris, the object of which is to show the superiority of their system for the manufacture of sugar over all other systems. It would, indeed, seem difficult to go beyond it, either in the mechanical or chemical processes. By high liming, and filtration through animal charcoal in grains and in large masses, the juice is said to be brought to the state of a pure solution of sugar in water, which Drs. Bache and McCulloh consider the great problem to be solved in sugar making. The evaporation takes place in vacuo at a low temperature; and a saving of fuel of more than 40 per cent. is *demonstrably* realized by the "*double-effect.*"

The system is in a fair way of trial in Louisiana. Notwithstanding its manifest excellence, some modifications may be found necessary to adapt it to the conditions in which the sugar-cane exists in our State. At all events, the developments of the system will not be uninteresting to sugar planters—to the *progressivists* among them, as well as to the stand-still or *Chinese*—to those who are willing, as to those who are unwilling, to adopt improvements requiring a heavy outlay.

Although the sugar-cane is not a subject of as much general interest as its congeners corn, wheat, &c.. and must yield to them in importance, yet it is not without peculiar claims on public attention. True, sugar is not blood-producing, according to the Liebigian theory; it contains no nitrogen—is not dignified by the presence of the phosphates; but, if not blood-producing, it is *blood-purifying*. Besides the experience that planters have of its health-giving properties upon man and beast, during sugar-making time, it is the opinion of one of our most eminent physicians that the virtue of the catholicons, panaceas, &c. resides chiefly in the syrup, which those who prepare them pretend to have only a vesicular agency.—Now, impurity of the blood, if it is not, as the venders of sarsaparilla affirm, the *only* source, is certainly *one* of the sources of disease. Impurity of blood in our country is owing, in a great measure, to the immense consumption of the flesh of that unclean animal, the swine; but let the consumer never eat it without molasses, and let him put a double dose of *sweetening* in his pies and puddings, his tea and coffee, his juleps and anti-fogmatics, and he may devour pork *ad libitum*.

Corollary: the "*blood*" of a country is "*pure*" in proportion to the quantity of saccharine matter consumed.

With great regard, H. B. T.

EXAMINATION OF THE DIFFERENT PROCESSES FOR MANUFACTURING SUGAR, Tried up to this time (1843), and the Motives which should induce a Preference for the Double-Effect Vacuum Apparatus for application in the Colonies.* By Messrs. DEROSNE and CAIL.

THE manufacture of beet-root sugar in France has gone through so many processes—so many different systems, such a variety of apparatus has been tried—that everything applicable to the manufacture of sugar has been subjected to the ordeal of experiment; so that, at the present time, theory being combined with practice, we may pronounce with a full understanding of the subject.

The manufacture of sugar embraces three distinct processes—1st, the mechanical, for the extraction of the juice of the cane or of the beet-root; 2d, the chemical, for the defecation of said juice; 3d, the evaporative, the object of which is to separate the sugar from the water in which it is held in solution.

* This term embraces all the European Colonial establishments in the East and West Indies.

We do not intend to examine here the mechanical processes, the object of which is the extraction of the juice from the cane. We will not include in our present investigation those advantages which consist in an increased yield of juice—advantages which are not to be neglected, but in regard to which we have still experiments to make, and to the study of which we are devoting our whole attention.

As for the chemical and evaporative processes, the object of which is to obtain from the juice extracted from the cane the greatest possible quantity of sugar, in regard to which at this day everything is known, they come entirely within the sphere of investigation which we have proposed to ourselves.

Chemical Processes.

The operations acknowledged now as indispensable in the treatment of the juice are—1st, the defecation by means of lime; 2d, the filtration through animal charcoal in large masses. These two indispensable processes give each other mutual aid.

Defecation in double-bottom Kettles, heated by Steam.

The first point in the manufacture of sugar is a good defecation, without which all subsequent operations proceed badly. The defecation should be so made as to furnish juice perfectly limpid, exempt from any milky appearance. This defecation is accomplished, in the old as well as in the new method, by means of lime. Brought in contact with the juice, lime neutralizes its acid, and concretes the mucilaginous matter given out by extraction. In the Colonies, lime is used in quantities too small to effect the separation of the heterogeneous matter, the presence of which is essentially injurious to sugar. It is well known there that defecation is more perfectly accomplished by larger doses of lime; but it has also been remarked that syrup defecated with an excess of lime *cooks* badly; hence it is used sparingly and with caution, and vegetable matters are allowed to remain in the juice, which are highly prejudicial, by converting a portion of the sugar into molasses. In the new process, a quantity of lime is employed, sufficient to effect a perfect defecation, without regard to what may happen to the syrup in the after processes. Our Derosne has employed in Cuba 7½ measures of lime per kettle, instead of 2½ employed in the common process.

The excess of lime which may remain in the juice is immediately eliminated after defecation by its passage through animal charcoal. This is one of the beneficial effects of this agent in the manufacture of sugar. The result is that the juice, well defecated with a sufficiency of lime, and then filtered, is nothing more than sugar and water, which only requires to be evaporated and cooked in a suitable manner to be converted into sugar containing the least possible quantity of molasses.

The kind of kettles employed in the defecation is a point of much importance.

Defecation by *naked fire** (fire directly applied to the bottom of the kettles), after the fashion in the Colonies, and as was practiced in the first stages of the beet-root manufacture, is very objectionable; because the moment the lime enters into combination with the extraneous matters in the sugar, the power should exist of immediately arresting the ebullition, so that the liquid may be at rest.—This is accomplished in double-bottom, semi-spherical kettles, heated by steam. By means of a stop-cock, the action of the caloric and the ebullition are immediately arrested, and the scum separates in two layers, one of which rises to the top of the kettle; and the other, which is heavier, falls to the bottom. In the intermediate space is a liquid perfectly clear, which is drawn off by means of a cock connected with a tube running up through the sediment into the clear liquid.

In the defecation by naked fire, when the moment of combination arrives, the fire has to be put out or damped, the ebullition still continuing for a longer or shorter time, during which the scum breaks and mixes with the mass of the juice, thereby rendering it impossible afterward to give it clearness or limpidity. This is one of the principal causes of defective manufacture. The extraneous substances remain in the mass during the whole time of evaporation and cooking, and decompose more or less of the sugar. Hence the necessity in the Colonies of continually skimming the kettles; whereas in the new system, once the juice

* In contradistinction to the application by steam, which is *indirect*.

is drawn off clear from the defecating kettle, not a particle of scum is found in the subsequent operations.

The imperfect defecation in the Colonies is the cause why the brown sugars made there do not *dissolve clean*, though their color may be good. This is an obstacle* to the direct consumption of those sugars, which must be removed.

Kettles having vermicular or gridiron pipes at the bottom have been used for defecation; such kettles do not answer well, the pipes rendering it difficult to get rid of the scum and to clean the kettles, which should be done after each strike.

The importance of the process of defecation being well understood, it will be seen how little notion of sugar-making those persons have who propose to do away with it.

Filtration through Animal Charcoal in Grains.—Employment of Large Filters.

The filtration through animal charcoal is a process which is not analogous to the filtration of water through sand. Animal charcoal acts chemically on the sugared liquid: it takes hold, as we have already observed, of that excess of lime which is necessary for a good defecation, but which becomes hurtful in the after-boiling; it absorbs the vegetable matter, which, while it darkens the color of the syrup, favors the decomposition of crystalizable sugar. Animal charcoal, therefore, acts by abstracting substances which are in combination with the juice, and not by arresting, as would a strainer, substances in *simple suspension*.

It is by not taking into account this difference, real as it is, between the proper action of animal charcoal and that of any mere filter-serving substance, that many persons have taken up the erroneous impression that animal charcoal might be dispensed with by filtering through sand or any other inert substance.

Filtration through animal charcoal is one of the most important points in the manufacture of sugar—not so much, as is generally supposed, in regard to the improvement of quality, as to increase of quantity; for upon the purity of the juice depends the amount of crystalization. There are manufacturers of beet-root sugar that employ 200 kilogrammes† of animal charcoal for 100 kilogrammes of sugar obtained. The expense is small, considering the facility of revivification.

From observations made by us during some years past, we have satisfied ourselves that it is highly important that the juice or syrup should remain a long time in contact with the charcoal. Far from being rapid, the filtration should be very slow. This consideration has induced us to substitute, in place of the Dumont filters, other filters of a different shape and of greater capacity. The smallest filters should now hold 1,200 kilogrammes of charcoal. We have had some put up in beet-root sugar manufactories which hold as much as 3,000 kilogrammes.

Although the filters employed should be of great capacity, their size does not preclude the use of any quantity of animal charcoal less than the full measure of the filter, even so little as 10 or 12 per cent. of that amount; but then the juice must remain longer in contact with it.

From the importance which, it is seen, should be attached to the chemical processes of the manufacture of sugar, no planter would, from motives of economy, be disposed to dispense, in such a system as that described in our work, either with the double-bottom defecating kettles, or with the large size filters.

Planters should bear in mind that the manufacture of beet-root sugar has become possible only since the application of animal charcoal in grains.

Processes of Evaporation.

If, for a number of years past, manufacturers agree in regard to the nature of the chemical processes to be employed in the manufacture of beet-root sugar, except as to some changes in the manipulation of those processes, the same agreement has not existed in regard to the evaporative processes.

For twenty years past, a great number of systems of apparatus have been

* Note by Translator.—This does not apply so strongly to the Louisiana brown sugars, which, although they leave a sediment when dissolved, are cleaner and better flavored than the generality of West India sugars. Our sugar is made in the fall and winter, when we are not troubled with flies and other insects, and, having a weaker juice to operate on, are obliged to use more care and cleanliness. Indeed, the adaptation of our sugars for consumption, in their unrefined state, will probably have a tendency to limit the resort to improved but expensive processes.

† 1 kilogramme=2.20 lbs. avoirdupois.

tried and successively abandoned; until, at last, opinion has settled down in favor of the double-effect vacuum system.

We say that opinion has settled down in favor of our system, although our apparatus is far from having been introduced into all manufacturing establishments; but its superiority is acknowledged, as well by those who do not, as by those who do, make use of it; and, were it not for the uncertainty that hangs over the sugar-making interest, it would be universally adopted, because it is established by the experience of the great manufacturers that without it competition is impossible.

It is now fully recognized by chemists, and admitted by all manfacturers, that ebullition at a high temperature is injurious to syrup; that under the influence of that temperature the greater part of the sugar in solution becomes uncrystalizable, and is converted into molasses. Hence the importance of rapid evaporation, by withdrawing more quickly the saccharine solution from the influence of high temperature.

It is admitted by the last chemists who have analyzed the juice of the sugar cane, that molasses is not preëxisting in it, but that it is wholly formed during the process of evaporation. Our Derosne, while in Havana, concreted, by solar heat, cane juice that had undergone no previous preparation; and he obtained a completely dry and crystalized substance, without any indication in it of the presence of molasses.

These principles, now undisputed, should therefore direct attention to that system of evaporation which secures most completely the fulfillment of all the requisite conditions.

We may class the systems of evaporation that have been successively tried in three categories:

1. Apparatus by naked fire;
2. Apparatus by steam in free air [under atmospheric pressure];
3. Apparatus in vacuo, operating at a low temperature.

We will examine successively each of these divisions, in order to bring to view the advantages and disadvantages incident to each.

Apparatus by Naked Fire.

The apparatuses by naked fire were the first to be tried, being those which naturally were the first suggested. In those apparatuses, ebullition, that causes the evaporation of the juice, begins at 100°,* and terminates when the syrup has acquired the density of the *strike*, or cooked syrup, at 115°.† This last temperature especially is highly injurious. Attempts were made in France to temper the action of this last degree of heat, by diminishing, as much as possible, the time during which the concentrated syrup was exposed to it. With this view the *bascule* kettles were constructed, by means of which a small quantity of syrup could be cooked at one time, and, when cooked, could be quickly emptied out. This contrivance did not, however, prevent the syrup from being exposed to the hurtful temperature of a blazing furnace, and from experiencing a very disadvantageous modification.

Naked fire was therefore abandoned in France, after a few years' trial, in beet-root establishments, for the apparatus by steam in free air.

In the Colonies, the mode of heating by naked fire was persisted in, and exists at this day in conditions much more unfavorable than those to which the beet-root manufacturers were subjected from the beginning. The kettles, in most cases of cast-iron, exposed to the heat of a furnace, are emptied one into another by means of ladles and buckets. During the time of emptying, the fire in the furnace continues to act, and the level of the syrup falling continually, that portion which is exposed on the sides of the kettles is burnt; hence the *caramelization* of a portion of the saccharine matter, which, mixed with the syrup, forms a leaven that decomposes a portion of the sugar. The cooked syrups thus obtained yield but from 45 to 50‡ per cent. of crystalizable sugar.

Kettles heated by naked fire, called *jumelles*, were tried in the Colonies, as well as bascule kettles; but it was found that the advantage resulting therefrom cost more than it was worth—the temperature of cooking experiencing no diminution.

* Centigrade—equal to 212 F. † 230° Fahrenheit.

‡ Note by Translator.—A mistake. They yield, even in Louisiana, about 65 per cent. of sugar.

CULTIVATION OF THE VINE.

(Concluded from page 357.)

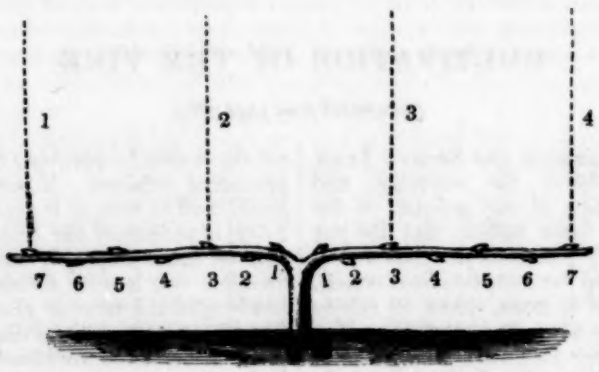
MANAGEMENT DURING THE SECOND YEAR.—March 1.—Remove the covering, and fork up the surface of the ground, to the depth of two or three inches, that the sun and air may freely penetrate it. April 1.—Keep the soil round the roots free from weeds, and the surface of it loose, either by raking or forking it up as often as necessary. May 1.—Now remember that only a single shoot is permanently to be trained throughout the summer; the object of leaving two buds the previous autumn being to provide against the loss of a shoot in case of any accident. As soon, therefore, as the strongest has grown sufficiently to be out of danger of being accidentally rubbed off, the other is to be cut out, as hereafter directed. If any other shoots have pushed besides the two principal ones, rub them all off. As soon as the shoots have grown about a foot in length, nail them to the wall or fence, as the case may be. Do this very carefully, for they are as yet extremely tender. When they have grown about six inches from the last nailing, they must again be nailed, and continually kept so, never suffering the tops of the shoots to be blown about by the wind. As the tendrils and lateral shoots successively appear throughout the summer, pinch off the former when they have grown about three inches in length, and the latter to an inch beyond the first eye. June 1.—Throughout this month, and the two following ones, whenever the ground appears parched through by the heat of the weather, give the roots, once a day, about half a gallon of soap-suds, or dung-water. Keep the ground free from weeds, and the surface loose and open, by raking or forking it up once a week throughout the summer. July 1.—The young shoots being firmly united to the preceding year's wood, and therefore past all danger of being broken off by any accident, unnail the weakest shoot of the two and cut it out close to the stem, making the surface of the wound quite smooth and even. The remaining shoot must be kept nailed to the wall as before directed. November 1.—Cut the vine to the two lowermost buds, and in the winter, if the weather be frosty, cover the ground over in the same manner as in the preceding winter.

THIRD YEAR.—March 1.—The winter covering may now be removed, (provided there should be no hard frost,) and the surface of the ground must be made quite mellow by using lightly a garden fork or trowel, observing great care to avoid disturbing the roots, as they will now be found very near the surface. Let the subsequent treatment throughout the season be precisely the same as in the preceding summer. If any fruit be shown, pinch it off as soon as it appears. November 1.—It is presumed the stem of the vine will now be more than two inches in girth, and therefore two leading shoots are to be permanently retained the next year. For this purpose, cut the vine down to the three lowermost buds, thus reserving one to spare, in case of accident. The vine will then resemble the adjoining figure. The roots being now sufficiently strong to withstand the severity of the weather, will not in future require covering.

FOURTH YEAR.—March 1.—Clean the surface of the ground, and fork it up lightly, and let the subsequent management throughout the season be the same as before. May 1.—As soon as the shoots have grown a sufficient length, nail or tie them carefully to the wall or trellis, and rub off all the others, if any should have pushed. If fruit be shown, pinch it off as in the preceding year. July 1.—Unnail and cut out the weakest of the three shoots, and train the two remaining ones carefully during the remainder of the season. Sept. 1.—Pinch off the tops of the shoots. November 1.—As the girth of the stem will not be less now than three inches, the vine may be permitted to mature fruit the next year, not exceeding five pounds weight; for this purpose, cut down the two shoots to the seven lowermost buds each. Prune away the remaining portion of the tendrils and dead wood close to the shoots; and cut out carefully all the lateral shoots close to the base of the buds, whence they have sprung. If the outer bark of the stem be decayed, rub it off clean; and then nail or tie the shoots to the wall or trellis in a temporary manner.

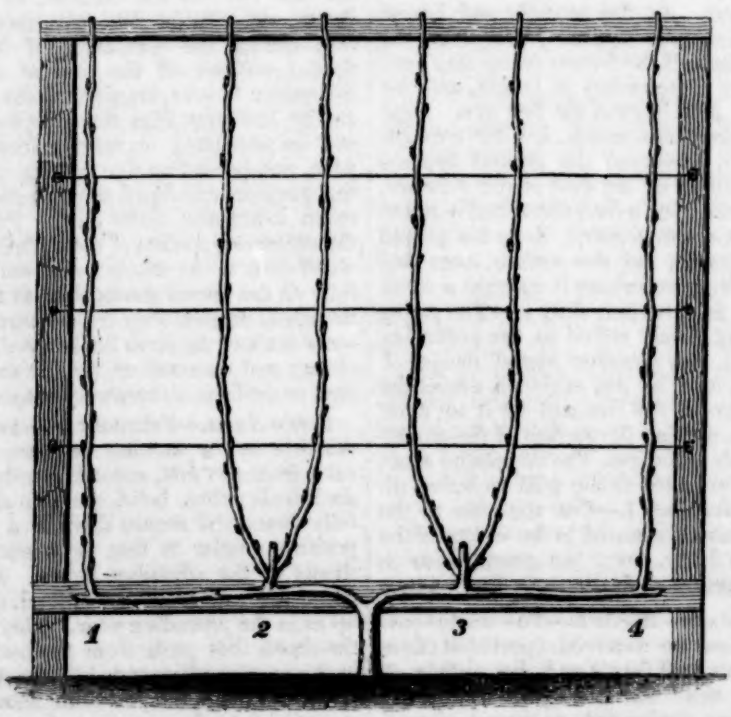
FIFTH YEAR.—February 1.—As soon after this time as the weather is open, cut out of each shoot the first, second, fourth, fifth, and sixth buds; then bend the two shoots carefully down, and secure them in a horizontal position, similar to that represented by the shoots in the adjoining figure. March 1.—Clean the surface of the ground, and fork it up as in the preceding year. May 1.—Train the shoots that push from the buds 3 and 7, in the manner represented by the dotted lines 1, 2, 3, 4, and if more fruit shows than is equivalent to the weight before mentioned, the excess must be cut off when the berries are set. July 15.—Continue the same course of management as in the preceding year, and

when the roots require watering, they are now sufficiently strong to have applied to them for that purpose any description of liquid manure that can be most conveniently obtained. September 1.—Pinch off the tops of the shoots, and the sap will then accumu



late in the buds. Here we will leave our author, and pursue a somewhat different treatment. Early in October, or soon after the fruit is gathered, let the shoots numbered 1 and 4 be cut back to as many buds as may be deemed necessary to produce the quantity of fruit which the vine can mature the next year, and let those marked 2 and 3 be cut back to the three lowermost buds. The lateral shoots, as also the stumps of the tendrils, should be cut out as directed in the preceding year. Let the loose and decayed bark be rubbed or scraped off, and the shoots fastened to the wall or trellis, to protect them during the winter.

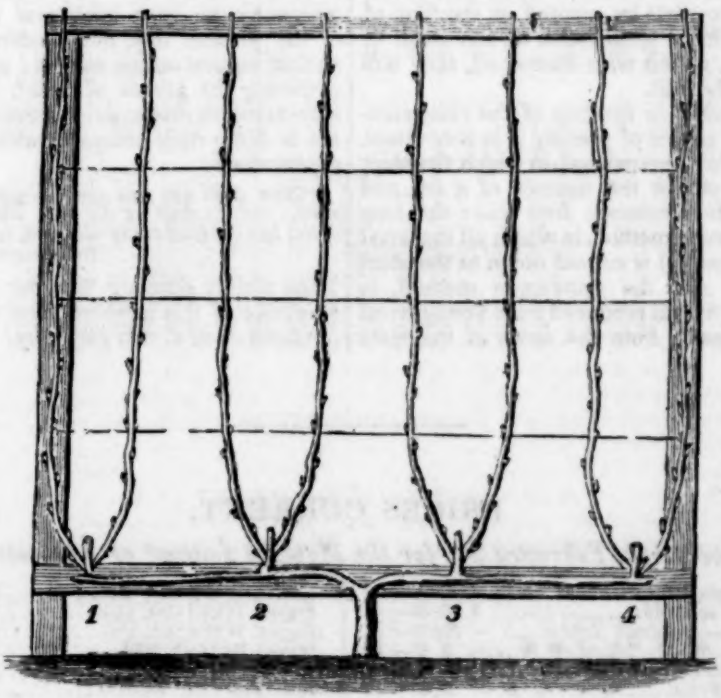
Sixth Year.—Commence early in March, and treat the ground in every respect, during the season, as in the preceding year, taking care to incorporate all the leaves or clippings of the vines with the earth about the roots. Early in May, or as soon as the shoots numbered 2 and 3 have grown a sufficient length, fasten them carefully to the wall or trellis, and let them grow until the first of July. Then cut out the weakest of the three young shoots, and treat the two remaining ones (as indicated in the adjoining figure) precisely as those numbered 1 and 4 were the year preceding, due care being observed to deprive all the shoots of any superfluous fruit or leaves



which may put forth. In October, soon after the fruit is gathered from the shoots numbered 1 and 4, cut them down to the three lowermost buds, thus reserving one to spare in case of accident, in order to produce double shoots the following year. No farther

treatment will be required than rubbing or scraping off all loose and decayed bark from the vines, until the next spring.

Seventh Year and Subsequent Treatment.—Commence early in the month of March, and treat the ground throughout the season as directed for the preceding year. Early in May, or as soon as the shoots numbered 1 and 4 have attained a sufficient length, carefully fasten them to the wall or trellis, and let them grow until the first of July. Then cut out the weakest of the three young shoots, and treat the two remaining ones (indicated by 1 and 4 in the annexed figure) in



every respect as those numbered 2 and 3 were the year before. By the end of the 7th year, if the plant belongs to a vineyard, in which the vines are grown at the distance of six feet apart. it will have acquired a sufficient number of leading shoots to bear fruit in abundance. But if it be an isolated vine, the horizontal branches may be allowed to extend themselves, and a pair of new shoots added each year, as long as the fertility of the soil and the nature of the situation may require it. During every subsequent year, the treatment of the ground during spring and summer should be the same as in the two seasons preceding. Early in September, the tops of the young shoots should be pinched off, in order that the sap may be assimilated into buds; and in October, or soon after harvesting the grapes, cut back the shoots of the same year and leave but four eyes to each; as, by leaving too many, the vine becomes exhausted and yields but little fruit, and is soon destroyed by premature decay. The shoots should be cut off in an oblique direction, opposite to, and about an inch and a half above, the fourth eye from the old wood, in such a manner as will shed the rain and allow the buds to suffer no injury from the wet. In the course of the month of May, the vines should be examined and all the shoots from the old wood rubbed off; and if an eye of the last year's growth should be found to produce twin shoots, the weakest of the two must be removed, in order that the remaining one may the better thrive. In the course of the season, the superfluous leaves and twigs must often be thinned out; and about the first of September, as in the preceding years, pinch off the tops of the shoots, in order that the sap may assimilate in the buds that are to be reserved for the next year. If the vines appear to be too exuberant, they may be pruned at the roots, without injury, at any season of the year. The most convenient period, however, for performing this operation, where the climate is mild, is in November, when the roots should be exposed to the light and air, by drawing away the earth, and letting them remain till spring; but where the winters are severe, and subject to continued ice and frost, early in December they should be re-covered with earth, mixed with well-rotted manure, leaf-mould, husks and seeds of grapes, or the clippings and leaves of vines. If they remain exposed during winter, early in March the earth should be restored, and mixed with the manure or other substances, as named above. This mode was called "ablaqueatio" by the Romans, and is still practiced with advantage in some parts of Italy and Spain.

Although spring and summer pruning of the vine may advantageously be adopted in all countries of the globe, yet in places ex-

posed to the sun, with mild winters, pruning in autumn is thought to be the best, the most natural, at which time trees and shrubs, by a divine and eternal law, drop both their fruit and leaves. "Snag pruning" is thought to be preferable by some, because, in "close pruning" the wounds spread, and prevent the protrusion of buds near the affected parts; but if these parts be covered at the time of pruning with a preparation of fine earth or white-lead, mixed with linseed oil, they will immediately heal.

Mr. Loudon, in treating of the vine, mentions three modes of pruning it in hot-houses, viz: the fruit-tree method, in which the plant is spread out in the manner of a fan, and trained like a common fruit tree; the long or young-wood method, in which all the wood above a year old is cut out down to the stool or stock; and the spurring-in method, in which the fruit is produced from young wood grown annually from the seeds of the main shoot, or shoots of old wood. The last two methods he regards as the best.

It is customary with many to cultivate flowers, or vegetables of various kinds, between or near their vines, without reflecting that they are doing them great injury by abstracting their proper nourishment from the soil; a practice not only strictly guarded against by the most intelligent vine-dressers of the present day, but condemned by all ancient writers on the subject; and Moses, in exhorting the people of Israel, very forcibly elucidated his discourse by commanding them not to defile their vineyards with the fruit of divers seeds:

"Thou shalt not sow thy vineyard with divers seeds; lest the fruit of thy seed which thou hast sown, and the fruit of thy vineyard, be defiled."
DEUTERONOMY, xxii. 9.

Thus plainly showing that the wisdom and prudence of this important law was well understood even at that early day.

PRICES CURRENT.

[*Corrected, February 24, for the Monthly Journal of Agriculture.*]

ASHES—Pots, 1st sort.....℔ 100 lb.	4 87½	@	—
Pearls, 1st sort, '46.....	5 56½	@	—
BEESWAX—American Yellow	— 26½	@	27
CANDLES—Mould, Tallow..℔ lb...	— 9	@	11
Sperm, Eastern and City.....	— 28	@	38
COTTON—From.....℔ lb.	— 9½	@	13
COTTON BAGGING—American...	— 11½	@	13
CORDAGE—American.....℔ lb.	— 11	@	12
DOMESTIC GOODS—Shirtings,℔ y.	— 5	@	11
Sheetings.....	— 7	@	15
FEATHERS—American, live.....	— 27	@	30
FLAX—American	— 7	@	8
FLOUR & MEAL—Genesee, ℔ bbl.	7 —	@	—
Troy.....	7 —	@	—
Michigan	6 87½	@	7 —
Ohio, Flat Hoop	6 87½	@	7 —
Ohio, Round Hoop	— —	@	—
Ohio, via New-Orleans.....	— —	@	—
Pennsylvania.....	6 75	@	—
Brandywine.....	6 75	@	—
Georgetown.....	6 75	@	—
Baltimore City Mills.....	6 75	@	—
Richmond City Mills.....	— —	@	—
Richmond Country.....	6 75	@	—
Alexandria, Petersburg, &c.....	6 75	@	—
Rye Flour	5 —	@	5 25
Corn Meal, Jersey and Brand.....	5 —	@	5 12½
Corn Meal, Brandywine.....hhd.	22 —	@	—
GRAIN—Wheat, White....℔ bush.	— —	@	1 75
Wheat, Western, Red.....	1 55	@	1 60
Rye, Northern.....	— 95	@	1 —
Corn, Jersey and North...(meas.)	— —	@	1 —
Corn, Southern.....(measure)	— —	@	—
Corn, Southern.....(weight)	— —	@	1 —
Oats, Northern.....	— —	@	50
Oats, Jersey.....	— 42	@	44
HAY—North River in bales, ℔100lb	— 56½	@	62½
HEMP—American, dew-rotted.. ton	115 —	@	130 —
" " water-rotted.....150	—	@	200 —
HOPS—1st sort, 1846	— 9	@	11
IRON—American Pig, No. 1.....	— —	@	32 50
" Common.....	22 50	@	25 —
LIME—Thomaston.....℔ bbl.	— 70	@	75
LUMBER—Boards, N.R., ℔M. ft. clr.	30 —	@	35 —
Boards, Eastern Pine.....	— —	@	—
Boards, Albany Pine.....℔pce.	— 10	@	18
Timber, Georgia Pine.....℔M. ft.	27 50	@	—

Staves, White Oak, pipe, ℔ M....	50 —	@	—
Staves, White Oak, hhd.....	40 —	@	—
Staves, White Oak, bbl.....	30 —	@	—
Staves, Red Oak, hhd.....	24 —	@	28 —
Hoops.....	20 —	@	30 —
Scantling, Pine, Eastern.....	— —	@	—
Scantling, Oak.....	— —	@	—
Timber, Oak.....℔ cubic foot	— 20	@	— 30
Timber, White Pine.....	— 13	@	— 20
Timber, Georgia Yellow Pine	— 24	@	— 28
Shingles .....℔ bunch	1 75	@	2 —
Shingles, Cedar, 3 feet, 1st quality.	26 —	@	— —
Shingles, Cedar, 3 feet, 2d quality.	22 —	@	24 —
Shingles, Cedar, 2 feet, 1st quality.	17 —	@	18 —
Shingles, Cedar, 2 feet, 2d quality.	15 —	@	16 —
Shingles, Cypress, 2 feet.....	13 —	@	14 —
Shingles, Company.....	28 —	@	30 —
MUSTARD—American	— 16	@	— 31
NAILS—Wrought, 6d to 20d...℔ lb.	— 10	@	— 14
Cut. 4d to 40d.....	— 4½	@	— 4¾
PLASTER PARIS—℔ ton.....	— —	@	— —
PROVISIONS—Beef, Mess, ℔ bbl...	10 50	@	11 50
Beef, Prime, ...	8 50	@	9 25
Pork, Mess, Ohio.....	15 —	@	— —
Pork, Prime, Ohio.....	12 75	@	13 —
Lard, Ohio.....℔ lb.	— 10½	@	— 11
Hams, Pickled.....	— 9	@	— 9½
Shoulders, Pickled	— 6½	@	— 6¾
Sides, Pickled.....	— —	@	— —
Beef, Smoked.....℔ lb.	— 9½	@	— 10
Butter, Orange County	— 20	@	— 22
Butter, Western Dairy	— 14	@	— 16
Butter, Grease.....	—	@	— —
Cheese, in casks and boxes.....	— 7	@	— 7½
SEEDS—Clover.....℔ lb.	— 8	@	— 9
Timothy.....℔ tierce	20 —	@	25 —
Flax, Rough.....	11 —	@	11 25
SOAP—N. York, Brown.....℔ lb.	— 3½	@	— 5½
TALLOW—American Rendered ...	— 8½	@	— 8⅝
TOBACCO—Virginia.....@ lb.	— 2	@	— 5
North Carolina.....	— 2	@	— 3
Kentucky and Missouri.....	— 2	@	— 6
WOOL—Am. Saxony, Fleece,.℔ lb.	— 35	@	— 37½
American Full Blood Merino	— 32	@	— 34
American ½ and ¾ Merino.....	— 25	@	— 27
American Native and ¼ Merino...	— 23	@	— 25
Superfine, Pulled.....	— 29	@	— 31

Sir

Philadelphia 10 Dec.r 1798

Enclosed is the Copy of a letter which I had the honor to write you by a Ship called the Suffolk; — unfortunately, as I have just been informed, Captured by the French. — As non of my Letters ever get out of their hands I have, that I may not appear inattentive to the honor of your Correspondence forwarded a copy of it. — With great esteem & respect

I am. Sir

Y.r Most Obed.t and

very Hble Servant

G. Washington

Sir John Sinclair Bar.t

White Hall London